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# **China Report**

**AGRICULTURE**

**No. 172**



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# CHINA REPORT

## AGRICULTURE

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## I. GENERAL INFORMATION

## MINISTRY OF AGRICULTURE FORESEES 20 BILLION JIN GRAIN INCREASE

Hong Kong CHING-CHI TAO-PAO [ECONOMIC REPORTER] in Chinese No 41, 14 Oct 81 p 12

[Text] According to Ministry of Agriculture estimates, if there are no more major disasters within the next month, the total grain output for the country will increase about 20 billion jin over 1980. Cotton output will increase approximately 3 million dan over 1980 which was a big bumper harvest year. Oil [crops] which have had successive years of marked increases in output will have an increase of more than 20 million dan. The output of sugar will increase about 300,000 tons. Flue-cured tobacco will increase approximately 5 million dan. Tea will have an increase of approximately 100,000 dan. Silkworm cocoons, hemp and jute and fruit may also fulfill or overfulfill this year's production plans.

Summer grains such as early rice and wheat which account for one-third of the annual total grain output have already had a bumper harvest; the autumn grain crop is coming along fine. Except for those provinces such as Heilongjiang, Shaanxi, Liaoning and Gansu which have suffered from fairly severe calamities, the autumn grain crop in many areas in northern China is growing well and a bumper harvest is expected. In the southern rice areas, this year the intermediate rice area was more than 144 million mu, an increase of more than 3 million mu. Except for Guizhou where growing conditions were not ideal, the intermediate rice crop generally grew better than last year. Although the late rice area is 6 million mu less than last year, an increase in output is still predicted because the crop is growing well in the major provinces.

This year the cotton area for the whole country was more than 75 million mu which is the largest for the past 20 years. The crop is growing better than last year in Shandong, Jiangsu and Hubei. A comparatively large increase in the total output of cotton is predicted. Other cotton producing areas such as Anhui, Jiangxi and Xinjiang are also hoping for a bumper harvest.

Other economic crops have had or will have bumper harvests this year. Total output for summer-harvested rapeseed was 68 million dan, an increase of more than 20 million dan over last year. Sugarcane and sugarbeets in many provinces are growing well. It is predicted that sugar production could be more than 3.3 million tons, an increase of approximately 300,000 tons over last year. The outlook for tea production is also good. As of 31 August the nation had already procured over 270,000 dan more tea than that in the same period in 1980.

## ANALYSIS OF BRIGADES WITH HIGHEST DISTRIBUTED INCOME

Beijing NONGCUN GONGZUO TONGXUN [RURAL WORK NEWSLETTER] in Chinese No 8, Aug 81 pp 7-8]

[Text] From 1979 to 1980, the number of production brigades averaging over 300 yuan in collective distributed income increased from 1,622 to 5,569, or 7.93 percent of the 700,000 production brigades throughout the nation, representing an increase of 2.4 times. According to statistics on the 5,008 brigades averaging over 300 yuan in collective distributed income in the 28 provinces, municipalities and administrative areas (figures unavailable for groups in the Xizang Autonomous Region and the 100 groups in the production brigades in Zhejiang), there were 1,273 which averaged over 400 yuan in collective distributed income, or 25.42 percent of the total, 440 which averaged over 500 yuan in collective distributed income, or 8.8 percent of the total, and 27 which averaged over 1,000 yuan in collective distributed income, or 0.41 percent of the total. The highest rate was achieved by the Fishermen's Rural Brigade of the Fucheng Commune in Shenzhen in Guangdong Province which averaged 2,074 yuan in collective distributed income.

It is to be noted that, aside from their rapid development, the prosperous production teams were also widely scattered. Taking the nation as a whole, there were no prosperous production teams in Yunnan, Guizhou and the Ningxia Hui Autonomous Region in 1979. In 1980, there were 6 in Yunnan, 1 in Guizhou and 2 in Ningxia. Although the number remained small, they served as shining examples for the backward areas which have had to contend with poverty over a long period of time. Like glowing pearls casting a brilliant ray of light, they heralded a bright future for the collective economy of the rural areas.

On their road to prosperity, these production brigades have taken a happy stride forward. Their success is due to the basic fact that they have taken practice as the only criteria for finding the truth, made a conscious effort to eradicate the influence of "leftist" ideology, liberated their thoughts and conscientiously implemented the party's principles and policies for the rural areas since the Third Plenary Session of the 11th Central Committee of the CCP, and greatly activated the positive attitude of large numbers of peasants by taking the following lines of action:

1. Establishment of a sound system of productive responsibility.

Because of the large number of production items and the wide range of operations, such as agriculture, forestry, animal husbandry, subsidiary crops, fishery and



industries, most production brigades have established a clear-cut system for the division of labor and a system of responsibility whereby the professionals are given the responsibility for joint production and remuneration. A few of the production brigades have adopted the system of fixed responsibility for specific jobs and of limited administrative responsibility. The various systems of production responsibility have established in the minds of commune members a close link between collective economic responsibility and their own economic benefits and have served to activate the positive attitude toward labor on the part of commune members. In the past, because of imperfections in the system of production responsibility and due to the fact that the positive attitude of commune members of the Xincheng Production Brigade of the Lungpu Commune in Ninghai County in Zhejiang Province had not been sufficiently activated, it was necessary to employ hired help every year to harvest rice and cotton at a cost of over 7,000 yuan and over 3,000 jin of foodstuffs. The forestry and transportation operations run by the production brigade suffered an annual loss of several thousand yuan. Since the adoption of the system of giving professionals the responsibility for joint production and remuneration in recent years, the units which suffered deficits have turned into profit-making units, the collective income has shown a big increase, and the collective distributed income of commune members has soared from 101 yuan in 1979 to 320 yuan. In 1979, the income level of the Xinlitun Production Brigade of the Jiangya Commune in Kaomi County in Shandong Province was that of a middle production brigade. With the adoption of the system of responsibility for joint production and remuneration in 1980, 10 units began to engage in labor as a sideline. As a result, the annual income reached 80,000 yuan, or twice the amount for the previous year. The per capita distributed income soared from 100 yuan the previous year to 425 yuan, the highest level for the entire county.

## 2. Readjusting the distribution of crops and taking full advantage of the productive potentiality of various areas.

The vastness of our country is such that all the various regions have their particular advantages. Shandong Province, for instance, is an important area for the production of cotton and peanuts. Because of the faulty internal structure of agriculture in the past, it was not possible to capitalize on its advantage in cotton and peanut production. After readjustments had been made for the areas for the cultivation of various crops in 1980, the area for planting cotton was increased by 35.8 percent, while the area for planting peanuts was increased by 10 percent over the previous year. The result shows that the total production of cotton in the province soared from 3.3 million dan in 1979 to 10.74 million dan in 1980, an increase of 220 percent, while the total production of peanuts increased from 21.2 million dan last year to 28.086 million dan this year, the highest level ever achieved. The net increase in income for the entire province came to 1,500 million yuan, or the per capita income of 23.1 yuan. The average per capita income from the sale of cotton alone in 4 regions in the northwestern part of the province came to 62 yuan.

Xinxiang County in Henan Province has long been a cotton-producing area. Some years ago, it was decided that emphasis should be put on food production and that an end be put to cotton cultivation. In recent years, reasonable readjustments have been made in the structure of agricultural production so that by 1980, it was possible to reap bumper harvests in various agricultural products. The per mu

production of food continued to exceed 1,000 jin. The total production of and contribution made by cotton more than doubled those of the previous year. Among the total value of agricultural products, the value of cotton alone increased by 35 million yuan, or at the per capita rate of 110 yuan. The average distributed income for commune members increased from 151 yuan in 1979 to 180 yuan.

3. Changing from simple operations to the joint development of agriculture, forestry, animal husbandry, sideline products and fishery.

The overwhelming majority of these production brigades have adopted this policy. Among the 206 production brigades with average distributed income of over 300 yuan, only 84, or 40.8 percent, rely on agriculture as their main source of income, whereas 117, or 56.3 percent, rely on industrial and subsidiary products as their main source of income. Of the 519 production brigades with average distribution income of over 300 yuan, 303, or 58 percent, are agricultural production brigades, while 216, or 42 percent, are fishery production brigades. Among the agricultural production brigades, 109, or 36 percent, rely on food production as their main source of income, 60, or 20 percent, rely on such cash crops as tea and vegetables as their main source of income, and 33, or 11 percent, rely on cotton as their main source of income. In 1976, the value of products from diversified operations, aside from agriculture, came to 3,000 million yuan, or 52.2 percent of the value of agricultural products. In 1980, the value of products from diversified operations rose to 5,140 million yuan, or 60.5 percent of the total value of agricultural products. Among the production brigades in the Yantai area in Shandong Province with over 300 yuan in average distributed income, most diversified operations accounted for 70 to 80 percent of the aggregate income. In the Suzhou area in Jiangsu Province in 1980, although agricultural production suffered a decline, the rapid development of industrial and sideline operations brought an increase in distributed income of 3 yuan over the previous year.

4. Strengthening administration of operations and reducing production costs. These production brigades have a relatively high standard of business administration and a relatively healthy administrative system, especially in financial management, so that they are able to reduce dramatically the cost of production. Expenditures of the 204 production brigades in Shanxi Province with average distributed income of over 300 yuan came to only 26.7 percent of the total income, or 10.3 percent lower than the average expenditure of the province. While total expenditure in Henan Province came to 34.4 percent of the total income, total expenditure for the 81 production brigades with average distributed income of over 300 yuan came to only 27.1 percent of the total income. The non-productive expenditure of these production brigades also fell far below that of other production brigades.

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## BIOLOGICAL RESEARCH TO MODERNIZE AGRICULTURE EMPHASIZED

Beijing ZIRAN BIANZHENGFA TONGXUN in Chinese No 4, 10 Aug 81 pp 32-35

[Article by Guo Xingxian [6665 5281 034] of the Department of Biology of the Chinese Academy of Sciences: "Biological Research Must Better Serve Agricultural Modernization"]

[Text] During the course of implementing the academy's guidelines of "emphasizing the foundations, emphasizing improvement to serve the national economy and national defense buildup" by the biological research units of the Chinese Academy of Sciences, there are many problems that require discussion and study. One of the problems is how to better serve agricultural modernization. Our academy's biological sciences department has 26 subordinate research institutes, and in the 1980 research plan one-third of the topics was directly or indirectly related to agriculture. But in recent years the topic of serving agriculture has been mentioned less and less. At the same time, applications research into topics serving agriculture has tended to weaken. Therefore, in implementing the guideline of "two emphases, two services," serving agricultural modernization better is a question worth noticing.

## A Simple Analysis of the Various Research Achievements

Through coordination and cooperation with brotherly units outside the academy, a series of achievements related to agricultural modernization have been realized in recent years and they can be analyzed according to the various categories.

Basic Research. Basic research in biology directly and indirectly serving agriculture can be divided into two groups. One is survey and research into biological types, distribution, evolution, kinship and natural conditions, i.e., the accumulation and compilation of basic data. Of course, this also includes theoretical research. The other is basic theoretical research. The work of basic data is important. It should be gathered during ordinary times so that it can be brought out when it is needed for use, and this work should lead production and construction. The task of basic data research in biology is extensive: it includes the compilation of China's fauna, flora, spore flora, economic entomological record, special books on mapping of vegetation on soils, etc. The basic data can serve agriculture in many ways, such as the protection of nature and resources, land utilization, and agricultural zoning; primary material for biological breeding, prevention and control of diseases of humans and of domesticated animals; prevention and control of plant diseases and insect pests—they all need related basic data to serve as their scientific basis. For this basic data work, our academy has organized national



cooperation to carry out surveys, arranged and compiled data, and published items of important systematic data one after the other. For example, compilation of the national flora has progressed rather quickly in recent years: 37 volumes have now been published or completed and we are striving to complete 80 volumes by 1985. This will provide preliminary clarification of the origin of about 30,000 types of higher plants. In recent years, our academy has strengthened the study different types of forests and grassland ecology in Jilin, Nei Monggol, Guangdong, Yunnan, Qinghai, and Xinjiang; to carry out long-term observations and research; and to strengthen the link between theory and the actual situation, combine the far and the near, and accumulate a systematic scientific record. In recent years, some major national economic construction projects have been the subject of debate in scientific and technological circles, such as the question of whether to build a fish passageway through the Gezhou Dam spanning the Changjiang in order to protect the aquatic resources. The Marine Biology Institute studied mainly the regional systems of fish and individual ecology on the basis of 20 to 30 years of survey and research data. The institute suggested that it is not necessary to spend a lot of money to invest in the building of a fish passageway, and it proposed measures that can be taken to protect fish resources. This suggestion prompted the government to conduct further surveys and research so as to avoid a premature decision on the construction of a fish passageway.

Basic theoretical research can make major and profoundly significant contributions to agriculture. For example, the study of photosynthesis, the chemical simulation of biological fixing of nitrogen, the utilization of cell engineering and genetic engineering to create agricultural crops with especially large economic value (including tree varieties and grass varieties), new types and new varieties of domesticated animals and microorganisms are all long-term and highly exploratory subjects of basic theoretical research. If a breakthrough is made in such research, we can turn to applications research, and this will bring about revolutionary changes in agricultural production. Take chemical simulation of biological fixing of nitrogen as an example: starting out from the study of the material basis of the function of nitrogen-fixing bacteria—the structure and the function of nitrogen-fixing enzymes—we can use the method of chemical simulation to create new types of catalysts, i.e., jumping from the commonly used synthetic ammonia catalyst that requires high temperature and high pressure at present to a catalyst effective under temperate conditions and to one effective directly under near normal temperatures and normal pressure. If research in this is successful in the future, its tremendous influence can be imagined. During the past 10 years, our academy has organized cooperative efforts together with some universities and research units of the chemical industry system and has realized some internationally advanced-level achievements in nitrogen-fixing enzymes and simulated chemical compounds. Again, for example, in the study of the nitrogen-fixing genes of nitrogen-fixing bacteria, the Shanghai Plant Physiology Institute discovered two new nitrogen-fixing genes and contributed to the molecular genetics of nitrogen-fixing. For this type of basic theoretical research which has possibilities for future production, we must be farsighted, we must have courage, and we must have the stamina to persist and to continue the effort.

Applied Research. Applications research can also be divided into two groups. Some basic research efforts, when they have progressed to a definite stage, can be linked to actual production, and new applied research can be opened up. This means that basic applied research can open up new ways for new materials, new methods and new techniques. When talking about new techniques of breeding, we have utilized

the new methods and new techniques of theories and methods of genetics and cytology to develop pollen culture, isolated female propagation, cultivation and detoxification using the tips of the potato stems to produce nontoxic stock seeds, transplanting the fertilized ovum of domesticated animals using the techniques used in transplanting the cell nucleus to cultivate hybrid fish of different genera or subfamilies of fish. Some of these already have established methods and some have already produced new varieties. In hormone research, we have mainly utilized new advances in biochemistry and physiology to develop oxytocin, sex hormones for many kinds of domesticated animals, insect moulting hormone and juvenile hormone, and information hormones for many kinds of insects or sex hormones, all of which have been used in production. For example, luteinizing hormone-releasing hormone and similar substances are widely used in stimulating sexual activity and ovulation of domesticated fish; they have more effectively solved the problem of artificial cultivation of fish fry of domesticated fish in our nation, and such efforts have attracted great international interest. The sexual exogenic hormones of the *Dendrolimus punctatus* and the meadow caterpillar have been separated, isolated, purified and artificially synthesized. Similar work has not been reported by foreign nations yet. In virological research, we have established serum diagnostic techniques such as coagulation by the principle of conversion and tagging of enzymic union, and we have helped many provinces and cities to determine and discover many new pathogens. We have also developed methods of prevention and control in diagnosis, prevention and control of the weak plant line of the mosaic viral disease of tobacco, preparation of the heliothis nucleopolyhedrosis virus, viral insecticide of the mulberry caterpillar, and the polyhedrosis virus of the domesticated silkworm. In addition, a multiple antimycin antibiotic has been successfully developed. It possesses a broad spectrum and is effective against many types of diseases. On the basis of physiological and ecological studies and the regional systems classification of algae and in combination with the needs of production, seven types of nitrogen-fixing blue green algae that propagate quickly, that fix a large amount of nitrogen, and that have a strong adaptability have been selected and successfully popularized over large areas in Hubei for many years, and they have opened up new sources of fertilizers for the rice fields. The achievements in these fields of research have mostly been developed and realized first by our academy within our nation, and like basic research, they have manifested the unique character of the Chinese Academy of Sciences. But we should also realize that although a fairly large part of these achievements has joined the ranks of internationally advanced achievements, these fields of research have mostly been created abroad, showing that the level of our nation's biology is still not high, basic theoretical study still has to be strengthened. At the same time, it may also be possible that some basic theoretical researchers do not take the initiative to connect their own research with actual production, thus burying the research fields or topics which could be connected to actual production. Attention should be given to this.

There is another type of research that specifically aims at problems now existing in agricultural production and that it studies and solves concrete production tasks. For example, soil fertilizers, agricultural zoning, surveying of wasteland, improvement of high-yielding paddy rice soil, manufacturing pelletizers for ammonium bicarbonate, studying trace elements, improving saline and alkaline soil, forestation, planting grass, and stabilizing sand have all served a function in production.

In breeding there are multiple spike corn and soybean disease-resistant varieties. In plant protection, an organic phosphorous insecticide phoxin that is highly efficient, has low toxicity, and has a broad spectrum been developed, and it has produced outstanding results in the prevention and control of lepidoptera and coleoptera insect pests. Through the study of the ecology of harmful rodents in grassland, a new and effective method of exterminating the rodents has been proposed. The study of high and stable yields of cultured fish in Donghu in Wuchang has resulted in the proposal of key measures to increase the yield. The study of fermentation of methane in farm villages has led to the proposal of a series of measures to utilize the raw materials and to increase the percentage of production of methane gas. The study of plant resources has led to the successful introduction from abroad over the past 10 years of more than 40 varieties of plants, including the cyamopsis tetragonoloba which has important economic value, and the survey and discovery of many types of domestically produced wild plants that have important economic significance. The simulation experiment of many kinds of tropical plant colonies of the rubber-tea multiple strata has been successful and has been popularized. Such applied research has tended to become weaker in recent years and we must give it attention. For example, comprehensive control of drought, waterlogging, salinity and alkalinity in the Huanghe, the Huai River and the Hai River; water and soil retention in the middle reaches of the Huanghe; the ecology of harmful insect pests and comprehensive prevention and control; the physiology of agricultural crops and measures to increase yields—all these major achievements were realized before the "cultural revolution," but now this type of research is not grasped as tightly as before.

Developmental Work. Some of the research achievements mentioned have been handed over to the agricultural and forestry departments, some can be directly popularized and utilized, and some must be coordinated with the local agricultural science research units and the people's communes so that they can participate in the development. In recent years a lot of developmental work has been done. For example, the propagation of virus-free pedigree potato seeds has won the support of the agricultural departments, and a pedigree seed farm has been established with the cooperation of such units as the Agricultural Science Institute of the Ulanqab League of Nei Monggol and in particular with the localities. Again for example, ammonium bicarbonate easily evaporates and easily cakes, the loss of fertility is great, and the application is inconvenient. The Nanjing Pedology Institute handed its research achievement and ideas to the Jintan Farm Tools Plant early and developed a pelletizer, making it convenient for deep application and for increasing the effectiveness of fertilization. With the support of the State Planning Commission, the institute and the plant joined with the Ministry of Chemical Industry to hold a nationwide field conference and organized batch production and popularization. The development of nitrogen-fixing blue green algae, development of the diagnostic method of soil nutrition and the diagnosis box, and the fermentation of methane gas were carried out early and well, on the one hand because of the attention paid to them by concerned scientific and technical personnel who actively went to the frontline of production to work, and on the other hand because of the massive support by the concerned departments which undertook the organization and leadership. Achievements in scientific research are not easily obtained, it would be a pity if they could be applied in production but still were not popularized. Now, many achievements still have not been popularized or are still not fully popularized and applied; this is a widespread problem.



## Related Problems That Require Attention and Solution

In order that biological research can better serve agricultural modernization, the following problems must be handled well.

**Increase the Understanding of Serving Agriculture.** We must fully understand that our nation has 1 billion people, including 800 million farmers, and the national foundation is weak. Biology is a basic science among the agricultural sciences. In "the two services," biological research should in particular conscientiously implement the guideline of taking agriculture as the foundation in developing our national economy. The situation in the farm villages at present is good, the problem of the agricultural production responsibility system has basically been solved, the productive enthusiasm of the farmers is very high, and the farmers urgently need science. At the same time, our nation's strength in agricultural science is weak and agricultural science is relatively backward. Therefore, biological workers must face this fact and the fact that they must increase the enthusiasm to serve agriculture and to contribute appropriately toward the modernization of agriculture. This is a glorious task that must not be shunned.

**Correctly Recognize the Proportion and the Relationship Among the Three Types of Research.** The guideline of "two emphases, two services" must be treated dialectically. Basic research and applied research are mutually connected, mutually promoting, and mutually convertible. For example, the synthesis of oxytocin of domesticated fish, the luteinizing hormone-releasing hormone and similar substances were the results of possessing the basic level theoretical research achievements of artificial synthesis techniques, and the development toward the new field of applied research of polypeptide synthesis and obtaining a series of polypeptide hormones for agricultural and medical use. They have been welcomed by the production departments, and some have even attracted great interest internationally. During the course of broad application of the luteinizing hormone-releasing hormone, some new theoretical problems which require solution have also been discovered; for example, the question of the structure of LRH in fish and the point of action of LRH in the central nervous system. The Academy of Sciences, as the highest academic natural sciences organization in the nation, undoubtedly should carry out additional basic research. Biological workers engaged in basic research can dedicate their whole lives to research; at the same time, when some basic research efforts develop to the stage where they can be converted to applied research, then this conversion should be advocated and encouraged, especially those basic research projects which can open up new fields of application. Applied research carried out by biological research units constitutes about half of all research efforts, and most of it is related to agriculture. Applied research should mainly be based on the needs of agricultural modernization to study and solve major scientific and technical problems of a key nature. In recent years, applied research serving agriculture has tended to lessen. At the same time, among the subjects serving agriculture, there are more requiring long periods of exploration and less which can be applied in the short term. In addition, there are few major comprehensive scientific and technical problems being studied. This is an important problem of the task of readjusting the direction of research. Whether in basic research or in applied research, the Chinese Academy of Sciences must insist on "the two emphases" before "two services" can be realized better. "Two emphases" must take the international level as the standard, but we must also start out from the actual situation in our nation; we cannot deviate from the actual situation and condition in our nation.

**Emphasize Developmental Work.** In lot of scientific research achievements, when they are moved from the laboratory and experimental fields to the large fields or the factories, because of different situations and conditions there is frequently a progression of research, a process from imperfection to gradual perfection. This type of developmental work frequently requires direct participation by the scientific and technical personnel before the research results can be converted to productivity. Developmental work is frequently complex and difficult because it involves our nation's level of production, economic conditions, coordination between departments and regions, the working level of popularization system, the farmer's cultural level and various similar factors. The difficulty of agricultural popularization even affects some scientific and technical personnel who are not willing to engage in applied research related to agriculture, and of course this also affects their enthusiasm in participating in developmental work. To better serve agriculture, we cannot unilaterally emphasize that developmental work pertains only to the agricultural departments, we must not retreat in the face of difficulties, we must enthusiastically apply research results in production according to need. We must conscientiously help research personnel engaged in developmental work to solve their actual difficulties. There are more difficulties in field and farm village work: scientific and technical personnel must increase their conscientiousness and enthusiasm in going into the villages and the fields to work. At the same time, scientific management personnel must help solve the actual difficulties, such as working conditions, living conditions, family care, operations and foreign-language learning periods.

**Research Results Serving Agriculture Must Be Properly Evaluated.** The research achievements that have possibilities for application cannot be simply evaluated by the standard of the papers submitted: their results in production or their future for application and economic significance must be sufficiently observed. We must also see the hardships of applied research work in agriculture; to truly obtain achievements that have important applicable value is not easy. In evaluating the research grades for promotion of scientific and technical personnel who work in the fields or in farm villages for long periods, we must not give too much consideration to their foreign-language level.

In summary, from the standpoint that biology is the basic science of agricultural sciences, from the standpoint of implementing the guideline of realizing national economic development on the basis of agriculture, from the standpoint that the 800 million farmers now urgently need science, from the standpoint that our nation's agricultural sciences are relatively backward, and from the tendency of recent years toward a weakening of biology to serve agriculture at our academy, our academy's biological research should strengthen its service to agriculture; this is very necessary. Each scientific discipline must fully develop its special ability, develop potential and make more and greater contributions. Biological workers must divide the work between themselves and agricultural science workers, coordinate with them closely, and walk ahead of research in agricultural science. This is predetermined by the nature of the scientific discipline, this is the need for division of scientific discipline and coordination; in this way, the advantages can be developed and the shortcomings can be avoided, the superiority can be developed, the unique characteristics can be demonstrated, and this can better serve agricultural modernization.

Several general opinions in accordance with the actual situation of the various research efforts are presented below for reference.

1. For workers participating in research into basic data in the course of investigating and studying the processes of nature, observation and understanding of nature are the fundamental work and purpose, there is no doubt about this; here, the workers must also pay attention to connecting theory with the actual situation, increase the level of basic data, and they must also take the initiative to care about and study the present problems in agricultural production and the future of the development of agricultural production so that they can present opinions or suggestions.
2. Over the past several decades, basic theoretical research in biology has progressed rapidly internationally at a rate of development that has not been seen before. At the same time, a number of rich and varied new ways, new methods and new techniques with important applicable values in medical sciences and agriculture have been opened up by progress in basic theoretical research. The Biology Institute of our academy must continue to strengthen basic theoretical research, and at the same time, we must convert the domestic and foreign achievements in basic theoretical research, including achievements in the various phases of research, to applied research in time in order to open up new fields, fully develop the characteristic of biology as the scientific foundation of agriculture and to walk one step ahead to contribute what biology should.
3. As biology serves agriculture and while implementing the "two emphases," the combination of the long term and the short term must also be handled well. Specifically, in the actual situation of the various aspects of the nation at present, the situation requires that we correctly handle this problem. Biological workers must care about the problems that exist in agricultural production at present, especially the major problems of science and technology of a key nature. We must develop the superiority of our academy of being multidisciplinary, of having many technical arms and being comprehensive. We must strengthen the topics of applied research that can produce short-term results in order to better serve agriculture in time.
4. We must strengthen the necessary developmental work and utilize the research results in production as early as possible. We must organize the existing and related research results, conduct surveys and research, and propose measures to hasten popularization. Some results must be further researched, some achievements still have not been popularized, and some results have been popularized but progress is not rapid; this involves many actual problems, and scientific management personnel must take the responsibility for opening up the situation together in order to help solve the problems and difficulties in popularization work.

9296

CSO: 4007/590



## NEW RICE VARIETIES DETAILED

## Varieties 3020, 3026

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] Chinese No 4, 5 Aug 81 pp 35

[Article by Cui Shoubai (1508 1108 2672), Rice Breeding Laboratory, Crop Institute, Shanghai Municipal Academy of Agricultural Sciences; "New Rice Varieties"]

[Text] (The Third) 3020

Events in Breeding: Hybridization in 1972 at the Municipal Academy of Agricultural Science's Experimental Farm by crossing Lianyuanzao (xian) with Zhaonan 13 (geng). Breeding conducted between 1974 and 1978 at the Chongming Red Star Farm Research Station. In 1979 took part in municipal rice hybridization key problem experiments on small plots. The year 1980 marked the tenth generation of the hybrid.

Traits and Characteristics: Plant height is more than 80 centimeters and tends toward xian type. Growing period similar to that of Guangluai No 4. Panicles beneath leaf layer; leaves fairly broad and stand erect both during seedling stage and late stage. Leaf color is dark green. Strong tolerance of cold and resistance to lodging. Moderate tillering strength. Panicle shape rather loose; moderate number of grains; high fruiting rate. Per thousand weight of grains about 30 grams. Husks are thin; color is clear; and rate of polished rice is high with a taste that is better than that of most xian rice. Susceptible to sheath and culm blight. Suitable as an early rice crop following plants of green manure.

1979-1980 Test Planting and Appraisal. In 1979, the Nanxing Third Brigade of Donggou Commune in Chuansha County test planted 1.02 mu for yields equivalent to 1180 jin per mu, a 29 percent increase in yield over Guangluai No 4. The commune seed farm test planted 1.3 mu for yields the equivalent of 995.3 jin per mu, a 2.7 percent increase over Guangluai No 4. But separation of heads from plants and threshing fairly difficult; numerous branches on plants.

Output of unpolished rice and output of polished rice for 3020 has been measured at 81.63 percent and 61.65 percent respectively, while for Guangluai No 4 it was 79.84 percent and 57.37 percent.

Statistical analysis shows striking differences in the levels of unpolished rice output for the two.

Events in Breeding: Hybridization in 1971 on Hainan Island by crossing Jianan No 2 (geng) with Tupu No 1 (xian glutinous). Breeding conducted between 1974 and 1978 at the Red Star Farm Research Station. In 1979, took part in municipal rice hybridization key problem experiments on small plots, and was test planted at the Donggou Commune Seed Farm, and at Nanxing Third Brigade in Chuansha County. In 1980, took part in municipal rice hybridization key problem experiments on small plots appraisal experiments, and yield appraisals done at the Academy of Agricultural Science's experimental farm. The year 1980 marked the eleventh generation of the hybrid. ✓

Traits and Characteristics: Plant height is more than 90 centimeters and of the geng type. Leaves are long and narrow, their color being light green and delicate. Moderate tillering strength, tolerance of fertilizer, moderately long panicles and moderate number of grains per panicle. Per thousand grain weight more than 30 grams. Rather weak temperature sensitivity. Latent in seedling age fairly large. Good quality rice with a fairly high output of polished rice. Somewhat susceptible to panicle neck blast, and poor resistance to lodging in late stages.

Test Planting and Appraisal: Test planted at the Nanxing Third Brigade in Donggou Commune in 1979, producing yields equivalent to 946.7 jin per mu. Determination of yield in checkerboard experiments at the Academy of Agricultural Science's experimental farm in 1980 showed yields equivalent to 723 jin per mu,\*\* while yields for Guangluai No 4 were equivalent to 916.8 jin per mu. Plot yield appraisals by the Nanhui County Farming Institute showed yields of 782.2 jin per mu as compared with Guangluai No 4's 1049.4 jin yields. In test plantings on 8 mu as a late rice crop by the Nanxing Third Brigade of Donggou Commune in Chuansha, yields averaged 474 jin per mu. Yields for Jiahu No 4 were approximately 460 jin, and for Nonghu No 6 about 400 jin.

\*\*The checkerboard experiment weight per hole method of determining yields: Usually methods for determining yields require calculation of the number of grains per panicle, the number of panicles per hole, and the number of holes per mu. The checkerboard seedling planting and weight per hole method of determining yields requires only a determination of the actual number of grains per hole, and thus error in determining of the actual number of grains per hole, and thus error in determining yields may be reduced to the lowest limits. The two are illustrated below.

Using W as the weight of yields per mu (determining yields by the jin),  $W_1$  is the weight of grains per hole (in grams);  $W_2$  is the dry weight of grains (in grams), and N is the total number of holes per mu, with  $n_1$  being the number of panicles per hole, and  $n_2$  being the number of grains per panicle.

The usual method of determining yields is as follows:

$$(1) W = W_2 \cdot n_2 \cdot n_1 \cdot N \cdot 1000^{-1} \cdot 500^{-1}.$$

The method for determining yields proposed by the author is:

$$(2) W = W_1 \cdot N \cdot 500^{-1}.$$

(1) In the formula,  $W_2 \cdot n_2 \cdot n_1$  and  $N$  all affect the value of  $W$ . (2) In the formula  $N$  is a fixed value (in checkerboard seedling planting, the number of holes per mu having been determined), so that only the single element of  $W_1$  affects the value of 1. If the seedling planting checkerboard is set at 3 cun x 4 cun (50,000 holes per mu), and the grain weight per hole in grams is multiplied by 100, the number of jin per mu may be determined. Use of this model is convenient, and calculations are simple.

#### Strain '6366'

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 4, 5 Aug 81 pp 35-36

[Article by Chang Ling [2490 7881] and Yu Kang [5940 1660]: "Farming Techniques For New Late Rice Crop Strain, '6366'"]

[Text] "6366" is a medium maturing late geng variety newly hybridized by this institute's rice laboratory in 1972 for use as a late rice crop. Plants are compact in shape; the short stems resist lodging; it is tolerant of cold; and rice quality is fairly good. By way of observing growing characteristics of "6366" and exploring farming techniques for bumper harvests, in 1979 and 1980, this laboratory conducted small plot comparative tests and test plantings for yields at Shanghai County's Huacao Commune Seed Farm, at the Jiwang Commune Hongwei Scientific Techniques Station, and at the academy's experimental farm. Test plantings on a 12.8 mu area in 1979 produced average yields of 860.2 jin per mu. In 1980, the Jiwang site test planted a 24.0 mu area for average yields of 708.3 jin per mu. At the Huacao site, yields from 19.3 mu were 18.2 percent greater than from Shuangfeng No 1. Yields from 1.2 mu of the institute's test fields amounted to 711.5 jin per mu, 37.9 percent greater than for Jianong 15. "6366" is fairly tolerant of cold and its yields rather consistent. A preliminary view is that it possesses definite utility. A briefing on its farming techniques are provided below:

(1) Sowing of seeds as early as possible so as to transplant early. "6366" has a growing period totaling about 135 days, 2 or 3 days longer than for Jianong 15. Leaf age is 35-45 days. Seeding should be done around 20 June with selection done early. As an intermediate sown crop, high yields may be fairly easily obtained. As a late sown crop, seedling age may be extended to about 50 days to assure adequate age and strong seedlings for safe heading. "6366"'s seedlings are short and sturdy, but per thousand weight of grains is low. Quantity of seeds sown should not be excessive, 100 to 110 jin per mu being about right. Secondly, applications of fertilizer to seedling fields should be somewhat greater than for other varieties. Though tolerant of low temperatures, if transplanted much too late, a noticeable reduction in "6366"'s vegetative form will occur, and the size of panicles will be smaller, seriously impairing yields. It is necessary to take advantage of "6366"'s short stem characteristics, and to rush against time either transplanting early or planting it as an early crop, doing early transplanting as the best way of making the most of its potential for high yields.

(2) Transplanting of a sufficient number of basic seedlings to get numerous panicles for high yields. "6366" is a short stemmed multi-panicle variety, the plants of which are compact, and the leaves very straight making it suitable for dense planting. Only if sufficient numbers of basic seedlings are planted can a fairly large number of effective panicles result, however, and fairly high yields be obtained. Two years of test plantings have shown the basic number of seedlings required to be between 280,000 and 320,000 per mu at a density of between 45,000 and 50,000 plantings per mu, for a substantial number of panicles. Given the short stems of "6366,"



the number of panicles contained in each mu of field will be greater than for medium and long stem varieties, and it will still be strongly resistant to lodging.

(3) Coordination of fertilization and watering to promote early development and consistent growth. "6366" has short stems, sturdy stalks, compact plants, and a small leaf angle. It is tolerant of fertilizer and resistant to lodging, and quantity of fertilizer applications may be greater than for most varieties. Total quantity of fertilizer that may be applied is more than 30 jin in pure nitrogen organic fertilizer amounting to about 40 percent. About 30 dan per mu of high quality base fertilizer, a topdressing of 50 jin of ammonia water, and follow-up dressings of between 80 and 100 jin of ammonium carbonate are required. Follow-up applications of fertilizer may be made at two separate times, the first time being within 3 to 5 days following transplanting, and the second time being within 10 days following transplanting to promote early development. Where growth is poor, supplemental applications of booting fertilizer or another bursting fertilizer may be made to prevent spikelet regression, but quantities should not be excessive.

(4) Good water management and timely draining of fields. After the late rice crop has been transplanted, temperatures tend to be high, and the respiration function of the root system is vigorous, making necessary regulation of the relationship between water and air. Intermittent irrigation should be done to promote root growth. At the same time, fields should be drained as required to insure steady growth. But draining of the fields should not be overdone. The right amount requires that there be "no overall lightening of the color of the soil, that there be small cracks in the soil around the edges of the fields, that one not be able to sink in the middle of the fields, and that new roots be seen to be developing at the base of plants." The leaves of "6366" are fairly light in color, and coming into milk takes place rather slowly. During the late stages, dryness and wetness should be alternated to extend the life of the root system. At the same time, action should be taken to guard against diseases and to control insect pests to promote full filling out of grains.

#### Variety 959

Shanghai SHANGHAI NONGYE KEJI [SHANGHAI AGRICULTURAL SCIENCE AND TECHNOLOGY] in Chinese No 4, 5 Aug 81 p 45

[Article: "New Late Geng Variety '959,' New Glutinous Rice Variety For Early and Late Crop Use--Guangfushu, Tonnuo No 1"]

[Text] Late gen "959" is a new variety successfully bred by the Hubei Provincial Haploid Rice Breeding Coordination Team in 1974 using (Nongken 58 x Tielu Dao) x second generation hybrid subjected to huapei [5363 1004] of the posterity of irradiated Nonghong 73, the resultant seeds from which were propagated through zhuxi [2701 0190].

Grown as a double crop late rice, "959" has a growing period totaling 130 to 138 days, with plants reaching a height of about 90 centimeters. Planted as a single crop late rice, the growing period is 145-150 days, with plants reaching a height of about 100 centimeters. Stems are tough and tensile, leaves are tall, straight and delicate, and they change color well in the late stage. Panicles are fairly

large; fruiting rate is high; per thousand weight of grains runs from 27 to 30 grams; and grains of paddy are ovular. They thresh easily but are not prone to shattering. Seedling age shows great flexibility; tillering rate is moderate; and the variety is suitable for planting over areas differing in water and fertility conditions, and in areas of moderate fertility, in particular, (15 jin per mu of pur nitrogen) results in increased yields are fairly good. The variety possesses definite resistance to stunting, bacterial blight, blast of rice, and sheath and culm blight.

In Hubei Province late rice area tests, and in test demonstrations at numerous sites within the province during 1978 and 1979, "959" produced yields of from 600 to 800 jin per mu, and sometimes as high as more than 1,000 jin per mu, about 10 percent higher than increased yields from local varieties. As of 1980, the area to which it was planted amounted to more than 120,000 mu (excerpted from "Euspei [5363 1014] Late Geng Variety "959" Breeding and Test Demonstration Report" of the Hubei Provincial Haplois Rice Breeding Coordination Team).

#### New Glutinous Rice Variety For Use as an Early or Late Crop—Guangfushu

Guangfushu is a Zhejiang glutinous that was irradiated with cobalt 60 and laser beams by the Fuzhou Municipal Institute of Agriculture. From the resultant rapidly transformed material, a new variety of glutinous rice useable as an early or a late crop was bred. In tests conducted at numerous sites over an area of more than 1,000 mu over a 2 year period, yields of from 700 to 800 jin per mu were commonly produced, and some yields were as high as about 1,000 jin per mu. In acceptance tests conducted in 1980 by relevant units in the province and municipality, yields of dry paddy of 1146.6 jin from 1.288 mu were harvested for the early crop. For the late crop, dry paddy amounting to 1219.5 jin from 1.225 mu were harvested.

When grown as an early crop on the Fuzhou Plain, Guangfushu has a growing period totaling 108 days. Sown around 10 March, it ripens before 5 July. Sown as a late crop on 14 July and transplanted on 28 July, it reaches full heading by 28 September and ripens on 11 November. The shape of Guangfushu plants is fairly compact; plants are from 81-90 centimeters tall, stems are thin; leaf color is dark green; and leaves turn color well in the late stage. The root system is well developed; tillering is strong; effective panicles number about 300,000 per mu; fully formed grains number 50 to 60 per panicle; the fruiting rate is 85 to 90 percent; the per thousand weight of grains of early paddy is 31.5 grams, and 32.4 grams for late paddy. No proneness to shattering. The variety is tolerant of fertilizer, quality of polished rice is moderately good and superior to that of Zhejiang Nuo or Zhenxuanshu. (Excerpted from "Agricultural Science and Technology Information," 1980, Issue 127 published by the Fujian Provincial Academy of Agricultural Science's Information Office.)

#### Tongnuo No 1

"Tongnuo No 1" strain was successfully bred in 1967 by the Nantong Prefecture Institute of Agriculture in Jiangsu Province using Gueihuahuang as the female parent and Zhumuo as the male parent. In 1976, it was formally designated "Tongnuo No 1." In that same year, it was planted on 211 mu at the institute's farm for yields averaging 1130 jin per mu. In recent years, planted as a single crop late rice, consistent yields of about 1,000 jin per mu were produced. As of now, it has been planted locally on an area of about 100,000 mu.

"Tongnuo No 1's plant shape is compact, stems sturdy, leaves short and erect; and both resistance to lodging characteristics and ventilation and penetration of light characteristics are good. The root system is well developed, and at the time of ripening, three or more leaves are still green. Rate of polished rice yield is more than 72 percent, and glutinous properties and taste are good. It is strongly resistant to rice leaf-hoppers, but is slightly susceptible to sheath and culm blight, and to blast of rice. Total growing period as a single crop is 165 days; as a late crop it is 135-140 days. (Excerpted from "Selected Scientific Research Data" 1924-1979, published by the Nantong Prefecture Institute of Agriculture)

9432

CSO: 4007/5



# HIGH YIELD SEED PROPAGATION METHODS EXPLAINED

Beijing NONGYE KEJI TONGXUN [AGRICULTURAL SCIENCE AND TECHNOLOGY NEWSLETTER] in Chinese No 8, 17 Aug 81 p 16

[Article by Zhou Tianli [0719 1131 3810], Crop Institute, Chinese Academy of Agricultural Sciences: "Hainan Experiences With High Yield Hybrid Rice Seed Production"]

[Text] In 1981, Zhanjiang Prefecture in Guangdong Province propagated 15,000 mu of seeds on Hainan Island for average yields of 230 jin per mu, a 29.4 percent increase over last year's yield of 170 jin per mu. The Zhanjiang Breeding Office raised seeds on 6.3 mu for yields averaging 406 jin per mu, and on 2.64 of these mu, yields amounted to 442.8 jin per mu. At the Hejiang Commune in Wuzhou County in Zhangjiang Prefecture, per mu yields from 0.86 mu amounted to 448 jin. Each mu had 200,000 effective panicles; each panicle contained 97.4 [potential] grains, and actual number of grains totaled 41 for a 41.9 percent fruiting rate. Per thousand weight of grains was 29.3 grams, between 10 and 16 grain per panicle more and a per thousand grain weight of about 1 gram more than for 1980.

In addition to climatic reasons, the reason for this year's high output of seed propagation on Hainan lay in attention to the following technical measures:

## 1. Setting of Sensible Sowing and Transplanting Dates

The key to seed propagation lies in the coincidence of flowering of the female parent [with the male parent]. Whether or not flowering dates coincide depends largely on whether the spacing in the dates of sowing and transplanting have been correct. Determinants of the spacing date are the growing period of the parent pairs, leaf age, and effective accumulated temperatures. On the basis of several years experience, Zhanjiang Prefecture formulated a plan for spacing the planting periods for seed propagation of Shanyou No 6 (See table). The growing period for IR 26, the male parent, is between 39 and 41 days longer than for the female parent, Zhenshan 97. The male parent is sown first and the female parent later. When the male parent has a leaf age of between 19 and 20, the female parent has a leaf age of between 14 and 15, a difference of 5 leaves. Effective accumulated temperatures vary between 340 and 360°C for the two. Use of these criteria for the formulation of the right spacing dates for sowing and transplanting are preconditions for assuring success in seed propagation.

Planning Chart for Spacing Dates in Planting Shanyou No 6

Second		First		No. of Batches	
Varieties		Sowing Date (Month/Day)		Leaf Age Difference (Leaves)	
Guojia 26 (1)		11/26		Number of Days Difference	
Guojia 26 (2)		12/2		Effective Accumulated Temperature (°C)	
Zhenxian 97 sterile line (Fall)		1/4-6		Transplanting Date (Month/Day)	
Guojia 26 (1)		8.5-8.9		Leaf Age at Transplanting Time (Leaves)	
Guojia 26 (2)		39-41		Seedling Age (Days)	
Zhenxian 97 sterile line (Fall)		340-360		Planned Date of Initial Heading (Month/Day)	
Guojia 26 (1)		12/28		No. of Days Between Sowing & Beginning of Initial Heading (Days)	
Guojia 26 (2)		7.2-7.5		No. of Leaves on Main Stem (Leaves)	
Zhenxian 97 sterile line (Fall)		32		Forecast Harvest Date (Month/Day)	
Guojia 26 (1)		30-31		Total Reproductive Period (Days)	
Guojia 26 (2)		3/23-24			
Zhenxian 97 sterile line (Fall)		76-78			
Guojia 26 (1)		117-118			
Guojia 26 (2)		19-20			
Zhenxian 97 sterile line (Fall)		14-15			
Guojia 26 (1)		4/21-22			
Guojia 26 (2)		103-104			
Zhenxian 97 sterile line (Fall)		101-102			

## 2. Correct Colony Composition

In order to get high seed propagation yields, it is necessary to make certain that the female parent has a sufficient number of panicles, and that the male parent has a sufficient amount of pollen. One of Zhanjiang Prefecture's experiences in seed propagation was widening of the row ratio to assure a number of panicles. The row ratio for the parent lines was generally 1:10, or 1:12, or 1:13. Female parent row plant distances were 4 x 3 or 4 x 4, and male parent plant distances were 5 to 6 cun. When density of female parents is high, and the flowering dates relatively concentrated, pollination is favored. When male parents are sparsely transplanted, full advantage can be made of their tillering heterosis. When tillers are numerous, the flowering dates are commensurately extended, assuring that the pollen needs of the female parent will be met in the late stage. Colony structures with special outputs of 300 jin were as follows: 160,000 to 180,000 panicles per mu, each panicle setting 30 to 35 grains, with a per thousand grain weight of about 28 grams.

## 3. Increasing the Cross Pollination Fruiting Rate

(1) Spraying with "920": Aborted xian-type male sterile lines commonly have choked necks, and every year a great deal of labor is wasted and numerous difficulties added to seed propagation as a result. From the time 20 percent of panicles have begun to head until heading has been completed, spraying is done in Zhanjiang Prefecture using "920" for a total of 3 times at a rate of 10 ppm, 15 ppm, and 20 ppm respectively, with between 50 and 60 jin of water per mu being used. This solves the choked neck problem on about 80 percent of the plants. Some units have experimented with a one-time spraying of 40 ppm of "920" when 20 percent of the panicles have opened, substantially solving the choked neck problem thereby, with no further need for workers to strip the buds.

(2) Spraying with Boric Acid: Use of 0.5 percent boric acid mixed with 20 ppm of "920" and using 50 to 60 jin of water per mu to spray plants can promote flowering. Flowering will be concentrated; stigmas will open outward; and the fruiting rate will be increased by 20 percent.

(3) Cutting of Leaves: Cutting of the leaves at the time of panicle emergence and first heading reduces obstacles to pollinization so that each female parent can get more pollen.

## 4. Attention to Male Parent Spacing Dates

When rice is in the meiosis stage and the flowering stage, it is particularly sensitive to unfavorable climatic elements. Both high and low temperatures can effect pollen development and the quantity of pollen. In planning the male parent spacing dates, attention must be given to missing such times. Ordinarily temperatures are low on Hainan in the springtime, so particular attention should be given this point during the male spacing period. A comparison of temperatures during the same period this year and last shows that between the time of showing and heading, temperatures for 10 day periods averaged 2 to 4 degrees Centigrade higher than last year, and during meiosis, temperatures were normal. This was an extremely favorable factor in successful seed propagation this year.



### 5. Strengthening the System of Responsibility

As a result of the implementation of systems of responsibility and a system of rewards whereby those who work most get most, the sense of responsibility has been strengthened; field care has been improved; and the rice has grown fine, creating conditions for high yields in seed propagation.

### 6. The Cost Problem

Hainan's seed propagation costs are a problem about which people are extremely concerned. This year's seed propagation on Hainan done by Zhanjiang Prefecture cost 325.80 yuan per mu for seed production averaging 230 jin per mu. At a ratio of 1:10 (1 jin of hybrid seeds is equal to 10 jin of [conventional] rice seeds), this would mean a total paddy output of 2,300 jin per mu. Figuring 0.20 yuan per jin of paddy, this amounts to earnings of 460 yuan per mu. At the same time, 200 jin per mu can be harvested from the male parent. This converts to 40 yuan for a grand total in earnings of 500 yuan per mu. After deducting costs of 325.80 yuan, a net income of 174.20 yuan is derived. During winter, the weather in Hainan is dry, and temperatures are fairly high, making the island suitable for the growing of rice. All that is needed is mastery of seed propagation techniques in accordance with the characteristics of the weather in order to get high yields and increase benefits.

This article has been written using materials provided by the Zhanjiang Prefecture Agriculture Bureau in Guangdong Province. The Yaixian Agricultural Bureau and the Hainan Zhou Seed Company helped with inquiries for which appreciation is hereby expressed.

9432

CSD: 4007/29

## BRIEFS

**PHOSPHATE FERTILIZER PRODUCTION INCREASE**—In accordance with the policy for national economic readjustment during the past two years or so, the phosphate fertilizer industry throughout the country closed down, stopped, merged and converted 360 debt-ridden enterprises and still achieved a marked increase in phosphate fertilizer production. The 1980 output of phosphate fertilizer for the country was 2.31 million tons, an increase of 64 percent compared to 1978, the period before readjustment. The phosphate fertilizer output from January to August of this year reached 1,636,000 tons. This is 230,000 tons more than the entire output for 1978. Moreover, the product has generally improved in quality while raw material and fuel costs have decreased. The phosphate fertilizer industry in thirteen provinces, municipalities and autonomous regions such as Yunnan, Sichuan, Hunan, Shanghai, Zhejiang, Anhui, Guangxi and Hubei has reached a point where it can turn deficits into profits. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 29 Sep 81 p 1]

CSO: 4007/68

GUIZHOU

BRIEFS

ZUNYI PREFECTURE AUTUMN FARMWORK--By 5 October, Zunyi Prefecture had completed reaping paddy rice on 2.84 million mu and corn on 1.88 million mu. By 6 October, the prefecture had irrigated 890,000 mu of farmland and sown rape on 220,000 mu. [HK212357 Guiyang Guizhou Provincial Service in Mandarin 2315 GMT 16 Oct 81 HK]

CSO: 4007/49



PROVINCIAL CCP COMMITTEE ISSUES NOTICE ON SYSTEMS OF RESPONSIBILITY

Shijiazhuang HEBEI RIBAO in Chinese 28 Aug 81 pp 1, 3

[Article: "General Promotion of System of Responsibility Linked to Output of Wheat to Win Bumper Harvest Next Summer; Hebei Provincial CCP Committee Issues Notice"]

[Text] The recent notice issued by the Provincial CCP Committee, "On the General Promotion of a System of Responsibility Linking Calculation of Remuneration to Output for Wheat" requires each jurisdiction to make promotion of various forms of a system of responsibility linking calculation of remuneration to output to be the central link in winning tremendously increased output from wheat next year, to exert painstaking efforts, and to act urgently and well.

The notice said the facts in Shijiazhuang Prefecture and in other prefectures have convincingly demonstrated that putting into effect of various forms of a system of responsibility linking calculation of remuneration to wheat production can closely link the labor accomplishments of commune members and the personal welfare of individuals, effectively overcome egalitarianism, make full use of the superiority of the collective economy, and arouse the enthusiasm for labor of commune members. It is able to encourage commune members to do intensive farming, and fully tap the potential for increased output. It is able to encourage commune members to study science and technology for scientific farming. It is able to encourage commune members to invest, to contribute manure, to promote the building of farmlands and to develop the mechanization of agriculture. This year, in all the brigades where a good job was done with the system of responsibility linking calculation of remuneration to output, the wheat was planted well, carefully taken care of, harvested rapidly, and threshed cleanly. Under these same circumstances, there were increases in output of 10, 20, or 30 and 40 percent. In a year of drought, numerous representative examples took place in which low yields became high yields, and high yields became ever higher yields. A large amount of facts show that the putting into effect of a system of responsibility linking calculation of remuneration to wheat output is an urgent demand of the masses, and is a major policy for promoting growth of wheat production. In Hebei Province, wheat fields account for about half of the grainfields, and wheat production occupies a major position in grain production. During the past 2 years, wheat has sustained disasters, and output has continuously declined. But next year will bring a new breakthrough, when total output will exceed 10 billion jin. Efforts to exceed the all-time highest level will rely primarily on the system of responsibility linking calculation of remuneration to output, and the popularization of science and technology for increased yields per unit of area. For this purpose, all brigades no matter whether high output brigades or low output brigades, and no matter whether wetland or dryland, should generally promote a system of responsibility for production linking calculation of remuneration to output before planting wheat this fall.

It is necessary to diligently summarize experiences and to purge leftist influences. Hebei Province's system of responsibility linking calculation of remuneration to wheat output is far from being promoted over the same large area as systems of responsibility linked to output for other crops. In most production teams there is a linking in fall but not in summer. In some, a system is set up in fall and winter only to be changed in summer, the main reason being failure to cast off the shackles of leftism, and improper solution to problems of ideological understanding. There is a lack of profound understanding about the serious damage done by many years of working in "large gangs," and distribution out of "a large common pot," and of the major significance of the system of responsibility linking calculation of remuneration to output. Some suppose that not much labor is required to care for wheatfields, that the amount of care is not great, and that there is no need for the system. They suppose that a system whereby individual households do the harvesting and the threshing makes for difficulties in verification of outputs, and is difficult to handle. They suppose that the workforce is organized into small units that makes use of farm machines difficult, so they do not want to use this system. Experience has shown that because it greatly strengthens commune members' sense of responsibility and effectively taps potential for production, institution of a system of responsibility linking calculation of remuneration to wheat output not only greatly increases output, but also means rapid harvesting, clean threshing, and a decrease in losses. The masses of commune members are more careful in looking after and in using farm machines, which not only increases the utilization rate of existing machines, but has increased ownership of farm machines by some production teams. Each jurisdiction has to arouse the masses for conscientious summarization of practical experiences, linking them closely to reality, purging leftist influences, emancipating the mentality, and setting hands and feet to work in active putting into effect of various forms of a system of responsibility linking calculation of remuneration to wheat output.

The notice said that in putting into effect any form of a system of responsibility linking calculation of remuneration to production, it is necessary to begin with facts and fully respect the desires of the masses. Unified administration with output being linked to labor may be instituted; unified administration with contracting for work or contracting for production with individual households may be instituted; or other forms of a system of responsibility linking calculation of remuneration to production may be instituted. If they work and the masses desire that they should continue in effect, that should be done too. One must see to it that each production team has the system of responsibility that suits its circumstances best. Those that have already put into effect a system of responsibility linking calculation of remuneration to production should strive to improve it. The power of decision as to which form of a system of responsibility to select should be turned over to the masses of commune members. In every production team, commune member conferences or commune member representative assemblies should democratically discuss and decide the system to be used on the basis of the production team's production conditions, economic conditions, and management levels, suiting methods to specific teams with no "arbitrary uniformity." Each echelon of leadership should make clear the characteristics and methods of each form, and strengthen tailored guidance to grassroots levels. No one has the right to force production teams to put into effect any system of responsibility or to change any system of responsibility.

No matter the form of a system of responsibility linking calculation of remuneration to production, all should be conscientiously carried out. The masses have to be aroused, advanced experiences introduced, and the lessons of experience summarized.

Every means should be used in an effort to do things more perfectly, both to make full advantage of the superiority of the collective economy, and to fully arouse the initiative of individual commune members to really achieve increased output and increased earnings. When a system of responsibility under unified administration linking output to labor is put into effect, the plot of land for which one is responsible is guaranteed to the person for a year, and when the masses are satisfied, a proposal of several years duration should be made. In fixing output quotas, there should be leeway so that commune members are able to exceed quotas in production. In general, the base production figure may be set on the basis of the average output for the previous several years and used in combination with production conditions and measures for increased production for the current year to determine production quota. It may also be slightly lower than per mu yields in normal years. Investment in production should be on the basis of need and capability. Where collective economic strength is great, more can be invested; where the collective economy is weak, less can be invested. Commune members should be encouraged to invest themselves. Crude manure can be collectively accumulated for collective use. Alternatively, commune members may accumulate it themselves for their own use. Otherwise, there can be a combination of collective contribution of manure, and accumulation by commune members for their own use as well. The method of rewards and penalties may be either full rewards and full penalties, or a system of graduated rewards may be instituted whereby the higher the output the higher the reward. For large and medium size farm equipment, pump wells, and other water conservancy facilities, collectively owned livestock, and vehicles, a system of management should be set up and perfected using a system of responsibility. Specific methods must be formulated for the management of trees alongside of land under a system of responsibility. Cutting or destruction of trees at will is not to be permitted. All farmwork that can be done as a whole should be done as a whole, and what can be divided up should be divided up. When contracting for work with individual households under unified administration is done, there should be a unified planting plan, which makes full use of the role of collectively owned means of production. When farm machines or pump wells are available, the land should be cultivated and irrigated under a unified system. Collectively owned property must be protected from loss or damage. Production teams with requisition procurement quotas should place quotas on individual households. Each production team should equitably set the amounts to be collectively withheld. Items to be considered in making withholdings include not only subsidies for dependents of martyrs and servicemen, households enjoying the five guarantees [childless and infirm old persons who are guaranteed food, clothing, medical care, housing, and burial expenses], care of hardship households, cadres, barefoot doctors, and teachers employed by production teams, but also depreciation of farm machines and pump wells, and funds for expansion of further production. Not only is it necessary to insure increased output for the current year, but also necessary to insure the speed of continued increased production.

The notice requires that all forms of a system of responsibility for wheat production must be formulated before the wheat is planted. Before the wheat is planted, each jurisdiction should assign plots to individual households or to the workforce so that commune members will be spurred to make preparations for plowing, collect more manure, collect good quality manure, promptly harvest and thresh autumn crops, level fields properly, and improve quality of seeding. While putting into effect a system of responsibility linking calculation of remuneration to wheat output, before the wheat is planted, it is necessary to distribute to individual households the private plots



that are to be enlarged in accordance with the spirit of pertinent documents of the Central Committee and the notice from the Provincial CCP Committee on enlargement of private plots. In teams in which "double contracting" with individual households has been put into effect, when the masses require enlargement of private plots, they must also be enlarged.

Finally the notice required that each echelon of CCP committees strengthen leadership. In the current system of responsibility linking calculation of remuneration to wheat output, particularly in the system of responsibility of unified administration with a linking of output to labor, and under unified administration with contracting for work with individual households, the broad masses have powerful requirements, and each jurisdiction should give accurate guidance to them. A good job in the various forms of responsibility that link production is a crucial policy that will determine increased output next summer, and it is also a major matter relating to the personal welfare of the broad masses of commune members. At the moment, quite a few cadres and members of the masses lack experience, so proper implementation will require arduous and painstaking work. Slightly more than a month still remains from now until when the wheat is planted. Time is short and a lot of work has to be done. All jurisdictions should strengthen leadership, both straightening out errant ideology and coping with things that are not done, and guarding against throwing up the hands and not caring and letting things slide. In view of Shijiazhuang Prefecture's experiences, the Provincial CCP Committee requires: (1) All heads and assistants in prefectures, counties, and communes must give personal attention and personally investigate and study, making deployments, checking on guidance, summarizing and promoting experiences, and solving existing problems. (2) All counties must hold necessary meetings, or operate training classes in order to provide one session of training to all commune and brigade cadres, both in order to solve problems in ideological understanding, and to learn practical methods. (3) Each production team must hold a meeting of commune members, and brigades must hold a commune members representative assembly to develop democracy, and to discuss and decide upon the specific ways of going about a system of responsibility linking calculation of remuneration to wheat production, doing things in a truly fair and equitable way so that everyone will be satisfied. (4) Prefectures, counties, and communes should organize large numbers of cadres to penetrate into production brigades to give concrete help and guidance, and promptly solve contradictions and problems that arise. (5) Attention should be given at one and the same time to the system of responsibility linking calculation of remuneration to wheat output, to the system of personal responsibility of commune and brigade cadres, and to the system of responsibility for farm technicians to arouse the initiative of all quarters to make a contribution to increased output of wheat. (6) Once a system of responsibility has been decided upon, commune, production brigade, and production team cadres should strengthen leadership, do a good job of political and ideological work and solve various practical problems so that the system of responsibility steadily improves.

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CSO: 4007/37

BRIEFS

**UNDERGROUND WATER SOURCE**—The second Heilongjiang provincial hydrogeological team recently discovered an abundant underground water source at the(Ashi) River valley area in the southeastern suburbs of Harbin Municipality. According to a preliminary investigation, this underground water source covers an area of 60 square kilometers to a depth of 30 to 35 meters. It lies 3 to 5 meters below the surface of earth and is capable of supplying 100 million cubic meters of water to Harbin annually. The water is good in quality and has not been polluted. [SK191248 Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 18 Oct 81]

CSO: 4007/54

## BRIEFS

HYBRID RICE PRODUCTION--Hubei Province's total output of hybrid rice is some 400,000 jin and its average per mu yield is more than 80 jin. The province has propagated some 240,000 hybrid rice seeds more than last year. The average per mu yield of seeds has increased by some 20 jin. [HK140711 Wuhan Hubei Provincial Service in Mandarin 1100 GMT 21 Sep 81]

CSO: 4007/54



## BRIEFS

**ECONOMIC STRUCTURE**--The Hunan provincial farm and land reclamation systems have readjusted the economic structure and have turned deficits into profits. Grain and oil production this summer increased by 100 percent over the corresponding period last year. The total industrial output and profits in the first half of the year increased by 29 percent over the corresponding period last year. Production of cotton, sugarcane and aquatic products also increased. In the course of readjusting the economic structure, the provincial farm and land reclamation systems stressed the economic results of the farm enterprises. In the past, the farms only paid attention to producing grain and cotton, leaving no room for other cash crops. In order to change this management system, planning for cultivation was readjusted in 1978. Both the per unit area yield and the total production have been increased. The farms also adopted diversification and unified management. [HX110330 Changsha Hunan Provincial Service in Mandarin 1100 GMT 23 Sep 81]

**PRIVATE MOUNTAINS ALLOCATION**--By the end of August, Hunan Province had allocated some 1,406 million mu of private mountains to some 908,000 peasant households. The average area of private mountains allocated to each peasant household is 1.5 mu. In the areas where private mountains have been allocated, the country people's government has issued commune members with licenses for the use of the private mountains. At present, all places are stepping up allocation of private mountains in an effort to complete the work this winter. This province began fixing forest rights and issuing licenses for the use of private mountains and allocating private mountains to commune members in March this year. In places which have more mountains, more private mountains will be allocated and in places which have less mountains, less private mountains will be allocated. In general, each household is allocated 1 to 2 mu or 3 to 5 mu. For any production team, the area of private mountains will not generally exceed 10 percent of the total forest area. No all state-owned or collective-owned forest farms or new sapling farms are allowed to be allocated as private mountains. Once private mountains are allocated, they must be afforested as quickly as possible. It must be announced that commune members have both the right of use of private mountains and forest rights. [HX110339 Changsha Hunan Provincial Service in Mandarin 2300 GMT 19 Sep 81]

CSO: 4007/54

## BRIEFS

**BEAN CURD RATION**—The Changchun Municipal People's Government decided to ration 14 jin of bean curd to each citizen effective in November, an increase of 2 jin of bean curd over 1980. When bean curd is in great demand, the daily supply will reach 9,000 to 10,000 plates, about 3,000 to 4,000 plates more than in 1980. The supply of other processed bean curd will also increase. [SK250226 Changchun Jilin Provincial Service in Mandarin 2200 GMT 22 Oct 81]

**GRAIN CONTRIBUTION**—Changchun Municipality, Jilin Province, has steadily increased its volume of grain handed over to the state. According to statistics, the municipality contributed 1.3 billion jin of marketable grain to the state in 1952, 26.5 percent of all provincial grain handed over to the state. In 1979 the municipality handed over 1.85 billion jin of grain to the state—over a third of the provincial volume—and almost 2 billion jin in 1980. The city is expected to have even more grain to hand over to the state this year. [SK021252 Changchun Jilin Provincial Service in Mandarin 1100 GMT 2 Oct 81]

CSO: 4007/54

## BRIEFS

**AGRICULTURAL HARVEST**—Xinmin County, Liaoning Province, expects bumper harvests of grain and oil-bearing crops this year, though it was hit by a serious drought. It is estimated that total output of grain, cereal crops and soybean will reach 940 million jin; total output of oil-bearing crops will reach 10 million jin, an increase of 39 percent over 1980; and per capita income will reach 230 yuan. In addition, domestic livestock and sideline production are well developed. According to statistics compiled at the end of September, hogs raised in the country increased 3.5 percent in number over the corresponding 1980 period. The number of sheep increased 58.6 percent over the corresponding 1980 period. Poultry in the county total 1.27 million. Some 35,000 households are engaging in raising poultry and domestic animals. [SK190649 Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 17 Oct 81]

**GRAIN HARVESTING**—Grain departments at all levels in Tieling Prefecture, Liaoning Province, are making proper preparations for procurement of newly harvested grain. Tieling Prefecture is reaping a bumper harvest of grain this year and the total output is estimated at some 2.2 billion jin, an increase of 10 percent over 1980. [SK170659 Shenyang Liaoning Provincial Service in Mandarin 2200 GMT 15 Oct 81]

**SILK PRODUCTION**—From January to August, Tussah silk production in Liaoning Province increased 8.24 percent compared with the corresponding 1980 period. The export value of Tussah products reached \$20.5 million. In 1980, Tussah cocoon output was over 1.2 million dan, a record since the country's founding. This provided ample raw materials for this year's silk production. [SK261021 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 25 Sep 81]

**FOREST NETWORK**—Liaoning Province had planted 177,000 mu of trees on 469,000 mu of arable land in 28 counties in 1980, planted 290 million trees around houses and along rivers, roads and ditches and built 4,600 mu of farmland protection forests. In the spring of 1981, Yichun Municipality had extended its forest network and planted trees on 1,000 mu of arable land to protect 950,000 mu of farmland. [SK220458 Shenyang Liaoning Provincial Service in Mandarin 1100 GMT 21 Sep 81]

CSO: 4007/54



# DRY CONDITIONS ENCOUNTERED IN FALL WHEAT PLANTING

## Provincial Government Notice

Jinan DAZHONG RIBAO in Chinese 25 Sep 81 p 1

[Article: Provincial People's Government Issues Urgent Notice on Doing a Good Job of Autumn Farming to Arouse Masses to Triumph Over Drought and Plant Sufficient Wheat Well]

[Text] On 23 September, the provincial government issued an urgent notice on doing a good job of combating drought to plant wheat.

The notice noted that drought conditions throughout the province are presently extremely serious, the drought area already amounting to 55 million mu of which more than 33 million mu has been seriously affected. Soil water content is everywhere less than 10 percent. Meteorological forecasts call for a continuation of scant rain throughout the province during late September. Dry conditions will continue to increase posing a serious threat to normal growth of both crops planted in the fall and late fall crops. All jurisdictions devoted urgent attention to fighting the drought during the previous period, making great achievements. However, in some places, there still exists a mentality of bemoaning difficulties and worrying, while waiting for rains to come. The "autumn equinox" has just passed, and the crucial time for autumn planting is at hand. Combat against drought to plant wheat has become a formidable and extremely urgent task. All echelons of government must take further measures, thoroughly arouse the masses, and use every means possible to plant a sufficient amount of wheat well.

The notice called upon all jurisdictions to do the following:

1. All echelons of government must take in hand, as a most urgent central task in current rural work, the combat against drought to plant wheat, and the main energies of all echelons of leadership must be devoted to this matter. All other work of any kind must center on and be subordinate to this central task of combating drought and rush planting. Meetings unrelated to the fight against drought and autumn planting should be vigorously cut back, and other matters requiring an excessive amount of the energies and labor of leaders must be postponed, insofar as possible, so as to permit concentration of strength on fighting drought and planting wheat. All prefectures and units having fairly good water conservancy conditions should strive to plant more wheat. Those units where the drought situation is serious and difficulties great should organize organizational cadres under the leadership of leadership comrades, to give practical assistance, giving special attention to making the most of the role of

systems of responsibility for production. Cadres and the masses should be educated to fully understand that doing a good job of planting sufficient wheat not only effects a bumper harvest in agriculture next year, but also affects the livelihoods of the people in cities and the countryside, and social order, and is a major issue with ramifications for the overall situation. Cadres and the masses should be led in a complete analysis of locally favorable conditions so as to firm up their confidence, triumph over drought, and surmount the mentality of bemoaning hardships and worrying, while depending on the heavens for rain so as to do a solid job of fighting the drought and planting wheat.

1. Reliance on self-help to surmount various practical difficulties. In the current struggle against drought, difficulties caused by lack of petroleum and lack of money are very great, and they cannot be entirely solved within a short period of time. The basic means to be used is reliance on local forces, reliance on the commune and brigade collective and the strength of the masses, and pooling the wisdom and efforts of all to solve problems. The province's current fiscal difficulties are very great, and it is also to give support, only insofar as resources permit, to a small number of prefectures in which drought conditions are especially severe, and hardships particularly great. Therefore, each jurisdiction must look to local resources, further exploit potential in every quarter, and do its utmost to raise some more funds, using them on immediate needs in fighting drought. As regards use of petroleum in the fight against drought, all who have diesel fuel on hand and have water resources too should permit early concentration for use in the fight against drought for autumn planting of quotas set for the fourth quarter. For places in which a shortage of fuel on hand exists, the province has already instructed commercial units to give priority attention to transfers, and each jurisdiction should give priority attention to rush transport. Rural villages are presently using 500,000 kilowatts of electricity, and the province is additionally doing all that can be done to supply excess electric power to rural villages. All electric power supplied rural villages must be fully devoted, during the autumn planting season, to fighting the drought and sowing of crops. All other uses of petroleum and electricity must be restricted. Use of electricity by commune and brigade enterprises must give way to fighting the drought and autumn planting, and some production that consumes large amounts of electricity may be temporarily suspended. Use of electricity for rural illumination must be greatly curtailed as well. Except for maintaining transportation of a few agricultural byproducts that are strongly seasonal in nature, all other tractor transportation must also be stopped. In combating drought, a good job must be done of conserving petroleum, and conserving electricity, conservation being made an issue and potential exploited so that limited water, petroleum, and electricity may provide greater economic benefits.

2. Emphasis on both indigenous and native methods in efforts to enlarge the irrigated area. In addition to making the most of the role of machine and electric irrigation, full use should be made of the workable indigenous methods of the past to increase water resources. More digging out of rivers to exploit the potential there should be done, as should increased sinking of simple pump wells and hydraulic pressure wells. Prefectures along the Yellow River should carefully divert the waters of the river for use. Places lacking water resources should arouse the masses to carry water to fight drought and sow seeds. In short, all kinds of water resources and devices for moving water should be put to use. An additional mu planted is an additional mu, and an additional tenth of a mu planted is an additional tenth of a mu. All available means should be used in an effort to complete this year's autumn planting quotas.

3. All trades and industries should vigorously lend assistance to the fight against drought and the sowing of wheat. In addition to agricultural and water conservancy departments, which concretely organize and give technical guidance under the leadership of the local CCP committees and government in how to fight drought and do autumn planting, other government units should individually take responsibility for actively and positively making a contribution to the combat against drought and autumn planting. Commercial and supply and marketing departments should give emphasis to organizing the collection and supply of petroleum resources; electric power units should use every means possible to generate more electricity, intensify management, do a good job of delivering electricity, and making every effort to assure electricity for use in fighting drought. Railroad and transportation units should make a priority matter the shipment of goods to combat drought to assure needs in fighting drought. Fiscal and banking units should do all possible to raise more funds to fight drought and do autumn planting, liberalizing farm loans. Relevant units should coordinate closely and work together to fight the war against drought and autumn planting.

#### Editorial Comment

Jinan DAZHONG KIBAO in Chinese 25 Sep 81 p 1

[Article: "Mobilize to Fight the War Against Drought and Autumn Planting"]

[Excerpt] The "autumn equinox" is past, and now is the time for rush sowing of wheat. Doing a good job of planting sufficient wheat holds major significance for winning a bumper harvest in agriculture next year, for aiding national construction, and for promoting stability and unity. A conspicuous problem currently facing Shandong Province in autumn planting is a fairly serious drought. Since the beginning of September, the entire province has had virtually no rain, and the drought situation has grown rapidly worse. The drought stricken area has increased from 24 million mu early in the month to 55 million mu, 33 million mu of which is seriously affected. In many places rivers have stopped flowing; the water table has dropped; and water impounded in reservoirs and behind dams is depleted, causing very great hardships in fighting drought and getting the soil moisture necessary for the sowing of seeds. For this reason, it is necessary to urgently mobilize, and to widely arouse the masses to use every means possible to fight the war against drought and for autumn planting.

It is necessary to have a proper understanding of the current drought situation. On the one hand, meteorological forecasts say that the possibility of a large rainfall within a short period of time is not great. The psychology of trusting to luck and waiting for rain to fall must be overcome, and a spirit of combat against great drought, and combat against drought over a long period of time, made ready. On the other hand, it is also necessary to resolutely reject the mentality and feelings that nothing can be done, and of bemoaning hardships and worrying. It cannot be denied that our agricultural production currently is affected to a very large extent by nature. However, natural disasters are not insurmountable. Experience has shown that we are not powerless in the face of nature, but rather that there is much we can do. The crux is a matter of state of mind. Since the founding of the People's Republic, Shandong Province's wheat yields have increased from an average of somewhat more than 80 jin per mu to somewhat more than 340 jin per mu, and in numerous years, increases in yields were earned through triumph over drought. Last winter and this spring, the province suffered a great drought, the like of which had not occurred in several decades, but through reliance on the party's policies and through reliance on



the initiative of the broad masses of peasants, the second largest bumper summer grain harvest since the founding of the People's Republic was harvested. Output of summer grain increased by a total of 17.6 percent over last year. We should realize now that there were numerous favorable circumstances for our triumph over great drought. One was the Sixth Plenary Session of the 11th Central Committee and the "resolution" it passed, which in uniting the thoughts of the entire party and all of the people, calling forth revolutionary vigor, and bringing about unity to look ahead have produced, and are still producing, major effects. A second is the increasing spread and perfection of the system of responsibility for agricultural production, which has extremely aroused the initiative of the masses. Third is the year after year bumper harvests in agriculture and the rapid development of diversification, which have laid a powerful material foundation for resistance to and triumph over natural disasters. Fourth is the considerable experience accumulated everywhere as a result of the long struggle to resist drought. If only these beneficial conditions are put to full use, and their dynamic activity turned to advantage, the hardships in the wake of drought can be surmounted.

#### Provincial Official's Remarks

Jinan DAZHONG RIBAO in Chinese 26 Sep 81 p 3

[Article: "Work Ceaselessly and Unremittingly to Triumph Over Serious Drought and Strive to Fulfill Autumn Planting Plans. Provincial CCP Committee and Provincial Government Convene Urgent Telephone Conference to Fight Drought, Issuing Call to the People of the Entire Province. Comrade Bai Rubing Makes Important Speech at Conference. Comrades in Charge at Provincial CCP Committee and Provincial Government Lead Work Teams to Serious Drought Areas to Guide Fight Against Drought and Autumn Planting"]

[Excerpt] Yesterday, (the 25th), the Provincial CCP Committee and the provincial government held an urgent telephone conference on the fight against drought to mobilize the people of the entire province on the foundation of their previous fight against drought and rush planting to work ceaselessly and unremittingly to triumph over the serious drought, using every means to hasten the pace of autumn wheat planting in an effort to fulfill this year's autumn planting plans.

Comrades in charge at the Provincial CCP Committee and the provincial government, and responsible comrades concerned from the Jinan forces and the Provincial Military Region, as well as responsible comrades from various units concerned directly subordinate to the province, and responsible comrades in CCP committees and government administrative units in each prefecture and municipality, and in municipal governments attended the telephone conference. The conference was hosted by the Provincial CCP Committee Secretary and Deputy Provincial Governor, Qiang Xiaochu [I730 2556 0443]. Bai Rubing [4101 1172 0393], Provincial CCP Committee first secretary made an important speech at the conference.

In his speech, Comrade Bai Rubing pointed out that Shandong Province's weather has been very abnormal this year. Spring drought has been followed by summer drought, and summer drought has been followed by autumn drought. Since January, accumulated rainfall in the entire province has amounted to only 388 millimeters, 35 percent less than for the same period in most years, and since entering the flood season, in particular, scant rain has fallen in this ordinarily rainy season and an unusual situation of no floods in the flood season has occurred. During August, precipitation averaged less

than half that of ordinary years, and since the beginning of September the province has had virtually no rain. The drought situation is rapidly spreading. In the three prefectures of Yantai, Weifang, and Qingdao, in particular, the drought situation is most serious. As of now, the drought area in the province covers 60 million mu, of which 38 million mu is seriously affected. Everywhere water content in the soil is below 10 percent. As a result of the long drought, water resources are seriously deficient. In 175 large and medium size reservoirs throughout the province, there is only 1.05 billion cubic meters of water, 65 percent less than for the same period most years. In quite a few reservoirs, water is below dead storage capacity. Most small reservoirs and dams have dried up, and throughout the province the major rivers have all but stopped flowing. Everywhere the underground water table has fallen by 2 or 3 meters, and in some places by as much as more than 10 meters. For an appreciable number of units, drinking water for people and animals has become a problem. Rarely has such a serious drought occurred during the summer and autumn season. The drought has already seriously impaired normal growth of fall crops, and some crops have already aborted. Even more serious is the great difficulty the drought has caused in sowing of wheat.

Earlier, the launching of a struggle against drought throughout the province by all echelons of the party and government aroused universal serious attention. From top to bottom leadership was strengthened; cadres were organized to go into the front line; the broad masses of commune members were aroused; potential was tapped everywhere; and anti-drought measures were implemented in a vigorous effort to save the autumn harvest and plant wheat by resisting drought, all of which produced remarkable results. However, as a result of the recent unusually high temperatures and the failure of rain to fall, the autumn drought is worsening daily. Difficulties in sowing wheat are becoming greater and greater. The 55 million mu of wheatfields throughout the province require soil moisture in order to sow seeds. According to 23 September statistics, 14 million mu of land has been cultivated throughout the province, 8 million mu less than last year. Sowing has been done on 2.4 million mu, 7 million mu less than last year. According to meteorological forecasts, little rain will fall throughout the province in the near future, and the drought situation will continue to expand. The "autumn equinox" has passed and only somewhat more than 10 days remain that are suitable for the planting of wheat. When it comes to planting wheat, time means yield, and planting with adequate soil moisture means quality. The autumn planting time is urgent, and the task arduous. Wheat is Shandong Province's principal grain crop. Whether it grows well or not directly affects whether next year will see a bumper or a lean harvest. It also affects the livelihoods of people in cities and the countryside, and affects social order. It is a major matter affecting the overall situation. All of our leadership comrades must understand the important economic significance and political significance of planting wheat. They must carry out mobilization of the entire party and all the people, males and females, the old and the young, all joining the fight to carry forward the modern Taishan spirit, seizing the time, and taking the initiative to wage a stubborn struggle with serious drought to win victory against the drought to plant wheat.

## BRIEFS

LIAOCHENG COUNTY FARM OUTPUTS—Jinan, 24 Oct (XINHUA)—Beginning from 1979, Liaocheng County, Shandong, has seriously readjusted its acreage for cotton and grain. As a result the county's acreage under grain has been reduced from over 700,000 mu in 1979 to 555,000 mu in 1980 whereas the acreage under cotton has been increased from less than 270,000 mu to 430,000 mu in the same period. In 1980 the county's total cotton output reached 453,000 dan, or 3 times that of 1978. Despite serious drought this year, the county has still reaped a bumper cotton harvest with total output expected to exceed 550,000 dan, or some 100,000 dan more than last year. Although the acreage under grain has decreased, the county's total grain output this year has increased by over 80 million jin, thanks to raising the per-unit yield. [Beijing XINHUA Domestic Service in Chinese 0150 GMT 24 Oct 81 OW]

CSO: 4007/49



SHANXI

BRIEFS

ANZE COUNTY AGRICULTURE—Taiyuan, 19 Oct (XINHUA)--Demarcation of agricultural zones has promoted grain output in Anze County, Shanxi. The county's total grain output in 1980 soared to 95 million jin, nearly doubling that of the 48 million jin in 1977. [OW261105 Beijing XINHUA Domestic Service in Chinese 0030 GMT 19 Oct 81 OW]

CSO: 4007/49

## NEXT YEAR'S WHEAT PLANS REVIEWED

Commentator's Look

Chengdu SICHUAN RIBAO in Chinese 15 Sep 81 p 1

[Article by Commentator: "Stabilize Crop Areas and Readjust Crop Patterns to Win Bumper Harvest Next Year From Winter Crops"]

[Text] Output from winter crops is the first season of output for the entire year. So long as winter crop output is equitably arranged to assure bumper harvest, a good foundation can be laid for realizing increased output for the entire year. This year, despite severe flooding, Sichuan Province's grain output will still be able to maintain last year's levels, and a bumper harvest from the winter grain crop will play a major role in this. All jurisdictions should adhere to a spirit of whatever favors increased output for the entire year, all around increase in output, and sustained increase in output, and on the basis of stabilized crop areas and readjusted crop patterns, direct their main attacks on the need to increase yields and increase total output making timely implementation of plans for next year's output from winter crops.

Sichuan Province uses substantially a system of two crops each year. Output from winter crops forms the foundation for the whole year's production. When the winter crop pattern is rational, that helps set the area to be sown for the whole year, to increase the multiple cropping index, and to increase yields per unit of cultivated area. It helps arrange the sequence of crops to be planted in the same fields to make the most of advantages for increasing yields from spring-sown crops; and it helps combine soil nurture and soil use to increase soil fertility. Natural disasters are relatively rare during winter and spring in Sichuan Province, so they pose relatively little threat to winter crops, which benefits consistently high yields. Rape oil occupies an important position in output from oil-bearing crops for the whole year. Consequently, one cannot suppose that a turn for the better has occurred in the grain situation during the last several years. If one omits winter output, its important role in the total year's output will not be seen. When making arrangements for next year's winter crops, while making sure that the winter crop sowing area will be increased and that the grain area will not be decreased, appropriate adjustments should be made among one crop and another, and one variety and another to give a boost to increased production for the whole year, all around increases in output, and sustained increases in output.

In readjusting the winter crop pattern, it is necessary to act in a practical manner and to adapt general methods to local situations. One must act assertively but safely, and not make drastic or overly big changes. Over the long range, a general soil survey should be made; inspection of agricultural resources should be done, and agricultural zoning work should be carried out. Crops should be planted according to the soil; strengths should be put to use and weaknesses played down; and the most should be made of advantages in a gradual movement toward regionalization and specialization. In the short term, it is necessary to take planned, step by step action in accordance with needs and possibilities. In places where grain output levels are low and people are eating "graduated rations," as well as in major disaster areas, suitable increases by a little in the wheat growing area should be permitted. Moreover, those thin soil and waterlogged fields with low wheat yields; those dryland wheat fields which get in the way of rush efforts to store spring rain water for the transplanting of paddy rice; those wheatfields in which early crops such as cotton are forced out in order to plant wheat; and wheatfields that squeeze out seedling fields and the growing of Chinese trumpet creeper may be cut back somewhat and arrangements made to grow some barley, or the growing of peas and green manures can be revived. At the same time attention should be given to improvements in farming methods, the adaptation of general methods to local situations for the promotion of strip interplanting, and leaving empty rows when planting winter crops so that cotton, sugarcane, flue cured tobacco, and corn may be planted early in spring. This method both helps tap potential for winter crop output and helps make the most of advantages for output from spring-sown crops.

Prompt preparation and implementation of plans to reform winter wetlands is another major measure for doing a good job in next year's winter crop output. Sichuan is a province where people are numerous relative to available land, where population continues to increase, and where the amount of cultivated land becomes less with each passing year. In the wake of this year's particularly large flood disaster, almost 1 million mu of cultivated land was destroyed, and reconstruction of this cultivated land is not something that can be accomplished in a year's time. Therefore in a situation of reduced cultivated land and no abundance of grain, no reduction in the grain growing area has to be assured. One important way in which economic crops may be suitably expanded and commodity production developed is intensive farming to increase the yields per unit of area and the multiple cropping index. In the reform of winter wetlands and expansion of the multiple cropping area of cultivated land a very great potential exists. Right now the winter wetlands in the province for which water conservancy is assured and which can be made over amount to more than 3 million mu. Of these winter wetlands, the remaking of some this year to grow winter crops is achievable. Each jurisdiction must act in accordance with actual situations, given attention to planning and implementation, dig ditches and branches promptly, and drain stagnant water. In fields with late maturing intermediate rice that has not yet been harvested, ditches in the shape of a cross should be promptly dug to drain water away from the plants and air dry the fields so that the fields are promptly made devoid of water so that wheat may be planted. For newly remade winter wetlands, production contract quotas may be somewhat lower in order to encourage the masses' initiative in converting winter wetlands. Newly converted winter wetlands should first be planted to green manure or forage, peas, or rape, after which they should be rotationally cropped to wheat.



This year Sichuan Province sustained exceptionally great torrential rains and flooding, which washed away many mountain and hill slopes and seriously eroded the soil layer. These places are urgently in need of side ditches, removal of silt and mud, construction of raised paths between fields, removal of sandy surface soil, and thickening of the soil layer in order to revive soil fertility.

This is a fundamental condition for realizing increased yields from next year's winter crops and spring-sown crops for which the masses must be organized and much energy expended. Along with restoration of the water system ditches destroyed by floods must go rush repairs on water conservancy projects that are in a precarious situation, with unified planning that takes all factors into consideration, making use of the slack time between the fall harvest until fall sowing begins to act urgently. Those seriously damaged fields that can be put back in operation before the sowing of winter crops should be energetically repaired, and those that cannot be restored for the time being should be worked on during this winter and next spring.

Prompt readying of sufficient superior varieties and fertilizer is extremely important if increased yields from winter crops are to be realized next year. This year about 15 million mu of wheat, or virtually half the crop throughout the province, was infested with rust and powdery mildew. Emphasis should be placed on promotion of superior varieties such as "Jinyang No 11" to replace some of the susceptible wheat varieties.

All jurisdictions should emphasize organization of superior varieties supply and make planned arrangements for mutual assembling by the masses of superior varieties, widespread development of fertilizer resources, and large scale accumulation of farmyard manure. Scientific use of fertilizer should be promoted in order to increase fertilizer effectiveness, to conserve investments, and to attain the goal of increased output and increased earnings.

Before winter crops are sown, it is necessary to summarize practical experiences, and to promote implementation of the system of responsibility of "three forming an organic whole, namely a system of responsibility for production, a system of responsibility for techniques, and a system of personal responsibility for cadres, attention being given to all three at once. The system of responsibility for techniques should permit numerous variations so as to be suited to the linking of output to labor, contracting for production with individual households, contracting for work with individual households, and such various forms of a system of responsibility to do a good job of technical service. No matter the system of responsibility for techniques used, all must perfect and improve upon the system for spreading science and technology, strengthening the training of technical forces, increase the levels of peasant technicians, and through them, increase the level of production technology of the broad masses, transmitting to myriad households the advanced farming techniques that should now be spread so that they will flower and fruit over wide areas.

## Bazhong County Plans

Chengdu SICHUAN RIBAO in Chinese 15 Sep 81 p 1

[Article by Chang Youjun /T728 0645 0193/, County CCP Committee Reporting Unit:  
"Bazhong Puts Into Effect Next Year's Winter Crop Production Plans; Intensified Ideological and Political Work to Grow More Grain to Help Disaster Areas"]

[Excerpt] Bazhong plans to grow 500,000 mu of rice next year, a 50,000 mu increase over this year. Because of the large amount of rainfall this year, a great increase has taken place in the amount of water stored in water conservancy projects. Attention should go to storing and managing this water, and not to further expansion of winter wetlands. Some communes and brigades with a particularly good water storage situation might also cut back on some of their winter wetland area. The area planted to pulses as part of the winter grain crop should be enlarged, both to solve the needs of the people's livelihood in many ways and to increase the source of animal feed.

In order to change the situation of low output from winter crops, each commune and brigade should adopt measures that further improve the system of responsibility for production, the contract system linking farming techniques to output, and the system of personal cadre responsibility, organically combining the "three systems" to arouse the initiative of commune members, farm technicians, and grassroots level cadres. Throughout the county, more than 230 farm technical cadres and a large group of peasant technicians have already signed technical contract agreements, linked to output with communes and brigades.

Currently, each commune and brigade is in active process of exchanging superior varieties, and taking action to drain moisture in light of the large amount of rainfall this year and the wetness of the fields, preparing the way to complete sowing tasks for high quality.

9432

CSO: 4007/36

## ZHEJIANG

### BRIEFS

**QINGTIAN COUNTY RICE OUTPUT**--Despite a decrease of over 3,000 mu for early rice this year, Qingtian County, Zhejiang, has increased its total output by over 2.4 million jin than that of last year. [Hangzhou Zhejiang Provincial Service in Mandarin 0400 GMT 24 Oct 81 OW]

CSO: 4007/49



## RECENT DEVELOPMENTS IN RURAL SAVINGS DESCRIBED

Hong Kong CHING-CHI TAO-PAO [ECONOMIC REPORTER] in Chinese No 38 & 39, 10 Oct 81 p 54

[Article by Shi Yirong [4258 5030 2837] and Shen Weibai [3088 3634 0271]: "Developments in Chinese Rural Savings"]

[Text] Rural savings in China have developed gradually since the founding of the state. Before liberation the broad masses of Chinese rural laborers were long held in a condition of slavery, living extremely impoverished lives. Not only was there no question of extra money for savings, but they actually add to borrow money at high interest to live on, so that when the state was first founded, with the exception of certain long-liberated areas, all areas in China's countryside were essentially "blank spots" in this respect. After Liberation, as land reform was carried out in the Chinese countryside and individual peasants obtained land and other means of production; production expanded rapidly. As agricultural cooperativization proceeded, the peasants gradually became more prosperous, and agricultural savings developed rapidly. Commune members' savings deposits in the rural credit cooperative organizations alone amounted to 430 million yuan in 1956, 42 times higher than in 1953; by 1966 they had increased to 1.46 billion yuan, an increase of 2.4 times over the 1956 figure; and in 1976 they amounted to 3.69 billion yuan, an increase of 1.5 times over 1966. In the last few years, and particularly since the Third Plenary Session, implementation of various economic policies has greatly stimulated the enthusiasm of the broad mass of peasants, agricultural production has developed rapidly, and the rural economy has flourished. Especially after the state increased the purchase price for agricultural sideline products, commune and production brigade collectives and individual commune members have had steadily increasing incomes, and agricultural savings on deposit have reached record highs. In 1979 surplus rural savings deposits in agricultural banks and credit cooperatives throughout the country amounted to 10 billion yuan; in 1980 they had increased to 14.9 billion yuan; and at the end of this June they had increased to 18.3 billion yuan, with commune members' savings deposits at credit cooperatives reaching 14.4 billion yuan, an increase of more than 32 times the 1956 figure. The funds in credit cooperatives have given effective support to the development of the rural economy; in the 8 1/2 years between 1973 and the end of June 1981, the total of all kinds of credit funds issued by credit cooperatives was 63.6 billion yuan. In addition, the credit cooperatives also had excess funds for deposit in banks, which increased the state bank's credit fund strength and actively supported state socialist construction. Such funds deposited in banks reached 22 billion yuan in 1980, and by the end of this June funds deposited in banks amounted to 13.4 billion yuan, equivalent to 117 percent of the banks' commune and brigade agricultural credit surplus for the same period.

In order to adapt to the development of the rural financial situation, the state bank has set up more than 20,000 offices in the countryside, and has set up rural credit cooperatives throughout the country's more than 50,000 people's communes, in addition to setting up credit cooperative branches or credit offices in half of all production brigades. The banking offices and credit cooperatives established in the countryside have a total of more than 500,000 employees. In addition, there are more than 340,000 persons not withdrawn from production who help run the rural commune members' deposit and loan activities, forming a nationwide rural financial network which serves the broad mass of laboring people in the countryside.

The characteristics of rural savings deposits in the last few years have been as follows:

1. Surplus savings have been increasing greatly, with the per capita level of savings increasing every year. The 1980 figure was up 49 percent from 1979, and in the first half of this year it was 23 percent higher than the first half of last year. The 1979 per capita surplus savings figure for the agricultural population was 12.24 yuan, while in 1980 it was 18.22 yuan; by the end of this June it had reached 22.37 yuan. Some 13 provinces, cities and autonomous regions had per capita rural savings figures higher than the national average. The figure for Shanghai and suburbs was 120.39 yuan, for Beijing and suburbs 88.18 yuan, for Xinjiang 54.63 yuan, for Guangdong 48.17 yuan, for Tianjin and suburbs 42.57 yuan, for Liaoning 35.69 yuan, for Shanxi 33.57 yuan, for Heilongjiang 32.86 yuan, for Zhejiang 31.46 yuan, for Fujian 30.62 yuan, for Shandong 30.04 yuan, for Hebei 27.91 yuan, and for Jiangsu 24.13 yuan.
2. The percentage of average earnings from collective distribution in a given year which goes to produce an increase in average rural savings in the next year is increasing. According to statistics from 16 county branch banks taking part in a national conference on rural deposit work, the average total per capita income in 1980 was 187 yuan, and the average surplus savings as of the end of June 1981 was 68.2 yuan, a net increase of 20.6 yuan from the end of the previous year, equivalent to 11 percent of the average total personal income for the previous year.
3. The share accounted for by time deposits has increased. For example, time deposits accounted for 59 percent of commune members' deposits in Hubei Province at the end of 1979, while at the end of 1980 they accounted for 64.5 percent and at the end of this June for 69.3 percent. In 1980, time deposits accounted for 65.3 percent of rural commune members' savings nationwide, while at the end of this June the figure had reached 69.6 percent.
4. The number of commune member households participating in savings generally is about 30 percent of the total number of rural households, while in areas where work has been carried out effectively, the figure is over 70 percent. Since the state founded, the great achievements made by China's rural banking have resulted primarily from the state's policy of encouraging and protecting the people's savings and its adoption of various specific measures to promote development of rural savings. Article 37 of the "Common Program" which was passed by the first plenary session of the Chinese People's Political Consultative Conference shortly after the state was founded specified necessary measures that the government should take in order to encourage savings by the people. Section 1, article 9 of the

Constitution of the People's Republic of China states that "the state shall safeguard the public's ownership of legal income, savings, houses and other means of production." At the same time, the state also drafted an interest rate policy aimed at encouraging saving. In recent years, the State Council has twice decided to increase the interest rate on urban and rural savings. In addition, in their savings and deposit work, the state bank and the credit cooperatives have consistently and resolutely implemented the principles of "voluntary deposit, withdrawal at will, payment of interest on deposits, and confidentiality of accounts." These policies, principles and important measures have done a great deal to promote the development of rural savings. Moreover, leadership at all levels has consistently treated rural savings work as a major task in fundraising for rural production construction. The broad mass of credit cooperative and credit office personnel travel through the countryside to every village and household and propagandize the policy, provide door-to-door service, make deposits and withdrawals easy for the peasants, and persist in constant savings work; this as another important condition for rapid development of rural savings in China. Even more important is the improvement in the standard of living of the broad masses of the peasants, giving them surplus money to use for saving.

Provinces and cities with per capita rural savings exceeding the national average (first half of 1981)

National	22.37
Shanghai	120.39
Beijing	88.18
Xinjiang	54.63
Guangdong	48.17
Tianjin	42.57
Liaoning	35.69
Shanxi	33.57
Heilongjiang	32.86
Zhejiang	31.46
Fujian	30.62
Shandong	30.04
Hebei	27.91
Jiangsu	24.13

8480

CSO: 4007/38



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TITLE: "On Problems of Breeding Disease Resistant Wheat Under the Condition of Frequent Rains of South China"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 9, Sep 81 pp 4-8

ABSTRACT: In south China, especially in the middle and low reaches of Changjiang, frequent rains and high relative humidity during the late stage of growth of wheat form a favorable condition for fungus diseases, including scab, white powdery mildew, rust, etc. It is, therefore, very urgent to breed wheat capable of resisting several diseases. Of these major diseases, scab occurs more frequently, reaching a peak every 2 years. In the early 60's, due to changes in biological strains, the rust resistant breeds lost their resistance in the production process, while the spread of white powdery mildew in the region is increasingly severe. Under a given natural condition, a host plant and several parasitic organisms often coexist in a small ecological system to form a disease complex and their interactions affect the resistance of the host to the various diseases. Under the condition of frequent rains of the south, although the pathogens of the diseases attack different locations, at different times and in different forms, they all constitute one disease

[continuation of HUBEI NONGYE KEXUE No 9, 81 pp 4-8]

complex with wheat as the host. Basic theories of breeding crops resistant to multiple diseases, as suggested by Van der Plank, Robinson, Sidhu, Webster, etc. are briefly discussed to form the basis for introducing the approach and the technique of breeding wheat of multiple disease resistance. Since the 70's, the author and colleagues have made some progress in that direction, using techniques of complex genetic grouping, distant hybridization, etc. and such resultant products as Jingzhou No 66 does express complex disease resistance to a certain extent. Lack of understanding of the genetic mechanism of scab resistance is among the problems.

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TITLE: "Major Characteristics and Cultivation Techniques of Wheat-48130"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 9, Sep 81 pp 8-10

ABSTRACT: Wheat-48130 is a mutant stalk selected from Omai No 6 by the institute in 1972 and bred out in 1978. Since then, there have been continuous yield tests in Wuchang for 4 years. Compared with Omai No 6, the yield increase is found to be in the 0.4-49 percent range. In Xiangyang District Center of Agricultural Sciences, its yield is the highest, reaching 762 jin/su; in other demonstrative fields throughout the province, it averages in the 400-662 jin/su range. It is recognized by the masses to be broadly adaptable, highly disease resistant, and tolerant of late planting and soaking. The most suitable planting time in Wuchang is early Nov; in northern Hubei it may be planted earlier in late Oct, and for high yield, it is necessary to be planted at a suitable time. A medium to high level of soil fertility produces the best result and fertiliser should be skillfully applied during the jointing stage, when physiological yellow spots appear on the leaves. With skillful fertiliser application, the spots are few and disappear quickly, but too much fertiliser can easily cause lodging.

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TITLE: "Prevent Natural Hybridization to Protect Purity of Rice Breed"

SOURCE: Huanggang HUBEI NONGYE KEXUE [HUBEI AGRICULTURAL SCIENCES] in Chinese No 9, Sep 81 pp 16-18

ABSTRACT: Ordinarily, in the process of rice seed propagation, attention is given to the prevention of mechanical mixing for the purpose of preserving breed purity. Mechanical mixing is indeed the major problem, but the problem of biological mixing of the breeds should also not be overlooked. In order to reduce or eliminate natural hybridization, the paper suggests the following: (1) As much as possible different breeds of approximately the same anthesis should not be planted in the same place; (2) Under certain conditions, the late maturing intermediate rice, such as 691 and the early maturing late rice, such as 105, may bloom at the same time, and therefore, they should not be arranged close together; (3) For the purpose of seed preparation of late rice, dual crop late rice seeds should not be used.

6168

CSO: 4009/71

## Agricultural Science

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TITLE: "Statistical Analysis of Spring Wheat Yield and the Weather Condition in Yanbei District"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 9, 20 Sep 81 pp 4-6

ABSTRACT: The spring wheat yield in Yanbei District has always been low and unstable. Since the liberation, there has only been one year when the average yield per mu of the entire district exceeded 100 jin. The average yield of the period 1976-80 increased only 44.6 percent over that of the period 1949-53, while the increase of corn yield was 184 percent and that of millet 106 percent. Using the method of mathematical statistics, this paper analyzes the relationship between the weather condition of different periods of the year and the yield of spring wheat. The results identify 3 weather factors: the mean temperature of the month of Jun, the rainfall of the period between late Apr to Early Jun, and the rainfall of the period between late Mar and middle Apr, as those having obvious effects on the spring wheat yield of the district. Of the three, the temperature of Jun is the restricting condition. The condition for a bountiful spring wheat harvest is an above 19.8 °C mean Jun temperature, more than 50 mm of rain in late Apr to early June, and more

[continuation of SHANXI NONGYE KEXUE No 9, 81 pp 4-6]

than 15 mm of rain in late Mar - middle Apr. The rate of guaranteeing a good yield of the 3 factors is 46, 50, and 42 percent respectively, while the probability of a combination of all 3 factors is only 46 percent. Based upon this analytical result, the paper claims that the weather condition of Yanbei is unfavorable for spring wheat production. Reasonable arrangements, improved cultivation measures, and suitable breeds may possibly be used to overcome the adverse effects of the weather conditions, and they are the key to increasing the spring wheat yield of the district.

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TITLE: "Observation and Study of the Growth and Development Principle of Winter Wheat in Yuncheng District"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 9, 20 Sep 81 pp 7-11

ABSTRACT: The Yuncheng District has 1/3 of the wheat acreage and nearly 1/2 of the production of wheat of Shanxi Province, but for a long time, the yield of wheat in Yuncheng has been only 200-300 jin/mu. In order to improve the yield, scientific cultivation measures must be adopted according to the ecological condition and the growth and developmental characteristics of the wheat, while the principle of evolution of the young spike, that of tillering and spike formation, and that of starch filling of the seeds form the theoretical foundation to guide wheat cropping. During the past several years, experiments are carried out by the authors to observe and study these principles. Results are reported.

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TITLE: "Urgently Develop the Cattle Industry"

SOURCE: Taiyuan SHANXI NONGYE KEXUE [SHANXI AGRICULTURAL SCIENCES] in Chinese No 9, 20 Sep 81 pp 15-18

ABSTRACT: At present, cattle is China's major source of power and fertilizer on the farms and such cattle products as meat, milk, hide, and internal organs are also important civilian, military, and foreign trade materials. China's cattle is small, weak, and has little meat and a low propagation rate. The meat producing characteristics of China's yellow ox are compared with the beef cattle of such countries as the USA, the USSR, Argentina, Brazil, etc. Since 1973, 17 breeds of beef cattle have been introduced and they are distributed in the Northeast, Xinjiang, the North China, and Guangdong and Guangxi and there are plans of using them to cross with local oxen for hybridization improvement. Very successful results in some regions are briefly reported. In 1979, 1.08 million oxen were raised in Shanxi, where there are 48,000 mu of grassland urgently awaiting improvement. Ways of enlarging the alfalfa acreage, utilizing agricultural by-products, improving the management level, etc. are suggested also.



# Biochemistry

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TITLE: "Mycoplasma-like Organisms Associated with Groundnut (Peanut) Witches' Broom Disease"

SOURCE: Shanghai SHENGWU HUAXUE YU SHENGWU WULI XUEBAO [ACTA BIOCHIMICA ET BIOPHYSICA SINICA] in Chinese No 3, Jul 81 pp 317-319

TEXT OF ENGLISH ABSTRACT: Groundnut (Peanut) witches' broom disease was discovered on Hainan Island, Guangdong Province. The diseased plant exhibited severe dwarfing and undifferentiated growth of the axillary buds. Mycoplasma-like organisms (MLO) of 100-760 nm were seen in the ultrathin sections of the phloem tissue from the

[Continuation of SHENGWU HUAXUE YU SHENGWU WULI XUEBAO No 3, Jul 81 pp 317-319]

diseased leaf stalk. These organisms were absent in the healthy plants. This is the first evidence of the existence of MLO in groundnuts in China.

9717  
CSO: 4009/62

Botany

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TITLE: "The Regeneration of Plantlets from Young Haploid Rice Somatic Explant and the Regulation of Plant Hormones"

SOURCE: Kunming YUNNAN ZHIWU YANJIU [ACTA BOTANICA YUNNANICA] in Chinese No 2, May 81 pp 165-172

TEXT OF ENGLISH ABSTRACT: The effect of plant hormones on the regulating direction of differentiation and organogenesis from explants were studied by using young panicles of haploid rice. A concentration of 2 mg/l showed the results that 2, 4-D induced callus formation, NAA induced root formation greatly, KT inhibited callus formation and organ differentiation. KT (2 mg/l) + NAA (2 mg/l) did not induce callus tissue, but caused a great number of plantlets to differentiate from the explant directly. When KT/NAA = 2:2, the differentiation percentage of the plantlets was higher, being 76 percent. The tests of different concentrations of 2, 4-D showed that the concentration of 2 or 4 mg/l induced callus formation up to 94 percent. Callus subculture on solid and liquid media showed when the lower concentration of 2, 4-D (0.5 - 1.0 mg/l) was added to KT (0.1 mg/l), with the callus growing sturdy and better redifferentiation. Albino plantlets which regenerated from haploid rice somatic explant were very few. The possibility of using calli-clones for the study of mutant and somatic genetics was discussed. With regard to

[Continuation of YUNNAN ZHIWU YANJIU No 2, May 81 pp 165-172]

callus redifferentiation, not only kinetin is needed, but the effect of auxin concentration of the induction medium is also remarkable.

9717

CSO: 4009/55

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TITLE: "A Study on Charting the Density Control of Larix Olgensis Stand for Pit-  
Props"

SOURCE: Beijing LINYE KEJI TONGXUN [FOREST SCIENCE AND TECHNOLOGY] in Chinese  
No 6, Jun 81 pp 8-15

ABSTRACT: The Fushun Bureau of Mines of Liaoning Province has one of China's largest coal mines. Every year, the state must supply 150,000 m<sup>3</sup> of pit-props for the use of the bureau. For the purpose of realizing self-sufficiency, a tree farm was established in 1948, with an area of 150,000 hectares. At present, 40,000 hectares of the farm are covered with trees, mainly deciduous pines [larch] of mostly the species of Larix olgensis. The 20-30 year stands are now very dense and rapidly differentiating; selective logging should, therefore, be carried out immediately. The authors introduced the technique of forest density control charting of a Japanese scientist and used it to chart the density of these pit-props to provide a reference for logging, growth forecast, reasonable management, resources survey, etc.

[continuation of LINYE KEJI TONGXUN No 6, 81 pp 8-15]

The process of gathering the data and compiling the charts is described. In conclusion, the authors suggest that the logarithm paper used for charting should be larger than the ordinary scale so that errors in reading will not easily occur.

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TITLE: "Studies on the Drought Resistance of Several Dune-fixing Tree Species"

SOURCE: Beijing LINYE KEJI TONGXUN [FOREST SCIENCE AND TECHNOLOGY] in Chinese  
No 7, Jul 81 pp 12-15

ABSTRACT: An experiment was conducted at the Mingin Sand Control Station of Gansu Province, located on the southwestern edge of the Tenggeli Desert of China, where the evaporation is 21 times the annual rainfall of 119.8mm and winds above 5m/sec occur 130 days of a year. The water table is 1-4 m and the mineralization is generally below 1.7g/l. Five species are selected for the experiment, including *Tamarix ramosissima* Ledeb, *Nitraria tangutorum* Bohr, *Haloxylon ammodendron* (Mey) Bunge, *Elaeagnus angustifolia* L. and *Populus simonii* Carr. Samples are taken at 9-10 o'clock in the morning of days of sunshine and little wind to determine the changes of moisture content and liquid carbohydrate density of the middle branches of these plants. As dehydration and high temperature tolerance is the basic indices for determining drought resistance of plants, the test results indicate that *Elaeagnus* and *Populus* are less drought resistant. In desert region plants of these 2 species can grow only in areas where the water table is relatively high or where irrigation is possible.

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ORG: Both of Fujian College of Forestry

TITLE: "A Method of Calculating Tree Height at Different Age Gradation With Various Site Index Classes"

SOURCE: Beijing LINYE KEJI TONGXUN [FOREST SCIENCE AND TECHNOLOGY] in Chinese  
No 7, Jul 81 pp 22-24

ABSTRACT: In the No 12, 80 issue of this journal, there was a paper, "The Table of Site Indices Analyzed by Calculation of Tree Height" by HUANG Daonian [7806 6670 1628]. Of the 3 methods introduced in that paper, HUANG points out that the first 2 methods should be used to derive the curve of various site indices with respect to tree species of relatively great variation of coefficient of height. The authors of this paper do not agree with HUANG's conclusion. In view of the fact that the tree height varies in different degrees in different age gradation, the indices curves of the various age grades should be adjusted first with a standard deviation and a variation coefficient. Sample calculations are given to illustrate the authors' point of view in forest mensuration.

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CSO: 4009/54



## Meteorology

AUTHOR: ZHANG Xuemin [1728 1331 2404]

ORG: Nanjing Air Force College of Meteorology

TITLE: "A Qualitative Analysis of Location and Intensity of Typhoon Rain"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 9, 10 Sep 81 pp 2-3

ABSTRACT: Typhoon is a high temperature and high humidity tropical weather system controlled by a high energy region, while a low energy region controls the dry and cool air behind the cold front. The rain of typhoon is in fact an external expression of a release of typhoon energy. As a forecast of typhoon rain is primarily a forecast of the location and intensity of the rain, this paper seeks to clarify the relationship of the location of the rain and the energy field and that of the intensity of the rain and the intensity of the energy. The energy distribution on the 500 mb isobaric surface and its relationship with the location and intensity of the typhoon rain are analyzed. The simplified equation  $T_t = T + 2.5q$  ( $^{\circ}\text{C}$ ) is used to calculate the energy.

AUTHOR: GUAN Fusheng [4619 7450 3932]

ORG: Central Meteorological Station

TITLE: "Analysis and Forecast of the Tendency of Summer Drought or Flood in the Haihe Drainage Basin"

SOURCE: Beijing QIXIANG [METEOROLOGICAL MONTHLY] in Chinese No 9, 10 Sep 81 pp 10-11

ABSTRACT: Based upon data of average 500 mb charts of the 26-year period of 1951-76, this paper compares and analyzes the circulation characteristics of early summer just before the period of Jun-Aug during the drought years and the flood years in the Haihe drainage basin which includes Hebei, the northwestern part of Shandong, the northern part of Henan, and the eastern part of Shanxi. On the basis of this analysis, the paper proposes forecast indices of summer rainfall in the Haihe valley. These indices are used, for the purpose of verification, to predict the flood stage of the 4 years, 1977 through 1980. The results are satisfactory. With respect to the summer rainfall of the valley, the emphasis is on the general tendency of the entire drainage basin. The 500 mb high altitude changes of the Qinghai-Xizang plateau in Feb-Mar are seen to be related to the summer rainfall in the Haihe valley and are used as a factor in the forecast.

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